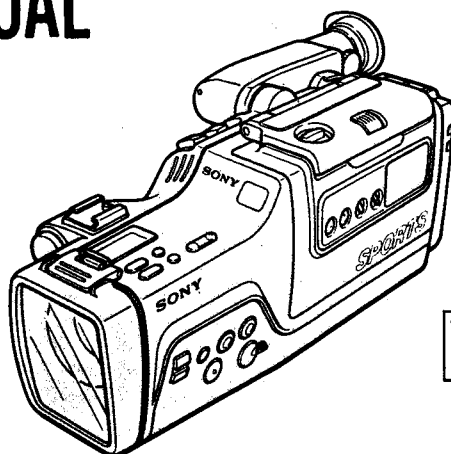




CCD-SP5/SP7

SERVICE MANUAL



US Model
Canadian Model
CCD-SP7
E Model
CCD-SP5

This is a waterproof type for daily life.
Do not use this in the water.

Video 8
USED 0' MECANISM

CCD-SP5/SP7 is almost same specifications as that of CCD-F40/F340 except for cabinet and small board in the contents.

This Service manual describes the difference between CCD-SP5/SP7 and CCD-F40.
For repair, please read this manual with CCD-F40/F340 service manual.

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 1.43 cm/sec. LP: Approx. 0.72 cm/sec. (playback only)
Recording time	SP mode: 2 hours (P6-120)
Playback time	SP mode: 2 hours LP mode: 4 hours (P6-120)
Fast forward time	Approx. 6 min. 30 sec. (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 6 × power zoom lens f = 9 - 54 mm, F1.4 with macro Filter diameter: 46 mm
Auto focus system	Infrared autofocus
Color temperature	Auto: From the light at a tungsten lamp to the light on a slightly overcast day.
Minimum illumination	9 lux
Illumination range	9 lux - 100,000 lux (0.8 - 9,294 footcandles)

Recommended illumination

More than 300 lux
(28 footcandles)

Aperture correction Automatic

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio output	Phono jack, - 10dBs, at load Impedance 47 kilohms Impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio input	Phono jack, - 10 dBs, input impedance more than 47 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, - 66 dBs, low impedance With 2.5 - 3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

— continued on next page —



8 VIDEO CAMERA RECORDER
SONY®

Display in the viewfinder

Mode and caution indicators
 Mode: REC/STBY
 BACK LIGHT
 ZERO MEM
 Caution: BATTERY
 DEW
 TAPE END
 CASSETTE
 CAUTION
 Time/date indication
 Title color indication
 Shutter speed indication
 Recording/battery lamp

Storage temperature -20°C to +60°C (-4°F to +140°F)
 Dimensions Approx. 136 × 137 × 331 mm
 (w/h/d)
 (5 3/8 × 5 1/2 × 13 1/8 in.)
 Weight Approx. 1.6 kg (3 lb 8 oz)
 excluding the battery and cassette
 Microphone Electret condenser
 microphone, omni-directional
 monaural type
 Supplied accessories Lithium battery CR2025 (1)
 Carrying case (1)
 Connecting cable (1)

General

Power requirements Battery compartment
 6 V/7.5 V
 Power consumption 6.5 W (camera recording)
 including the viewfinder
 Installation Vertically
 Operating temperature 0°C to 40°C (32°F to 104°F)

Optional accessories

Battery pack NP-55, NP-77
 AC power adaptor AC-V55
 Car battery cord DCC-16AW
 Connecting cable
 VMC-910MS/920MS (2 phono to 3 phono)
 VMC-710M/720M (2 phono to 2 phono)

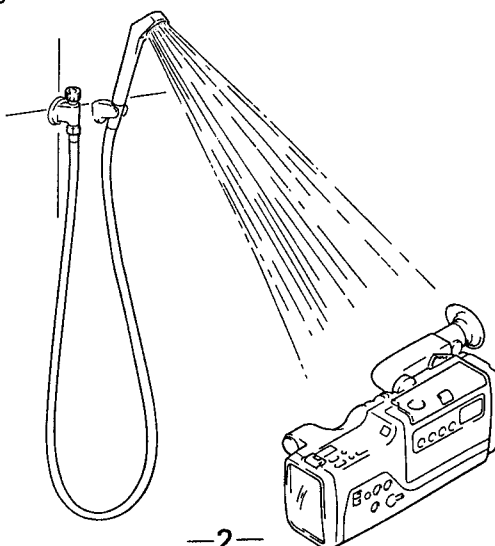
TYPICAL DIFFERENCE

Change of parts name due to the change of cabinet and small boards.

CCD-F40/F340		CCD-SP5/SP7
MC-24 board	→	{ MC-29 board
		{ MJ-19 board
PA-13 board	→	PA-14 board
SW-92 board	→	SW-93 board
ZM-8 board	→	ZM-9 board
FC-16 board	→	{ FC-19 board
		{ TI-13 board
FD-6 board	→	FD-9 board
FV-1 board	→	FV-3 board
EJ-4 board	→	EJ-6 board
VF-13 board	→	VF-20 board
TL-18 board	→	TL-21 board
TL-19 board	→	TL-24 board

How to check the drip-proof function after the completion of repair.

Install a shower at the tap and check if there is any leakage of water by sprinkling water over the main body evenly.



SAFETY CHECK-OUT

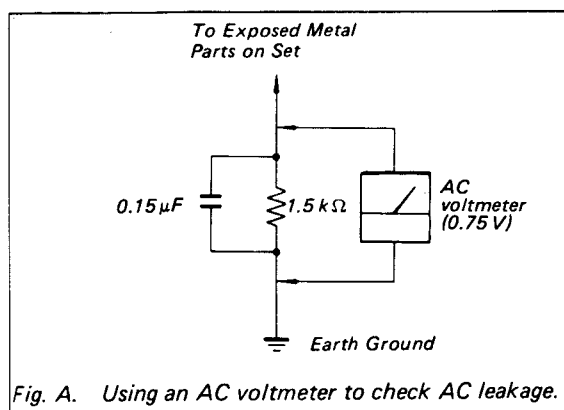
After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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			SUPPLEMENT-1		

• For mechanical adjustment;
refer to the separate volume, "8 mm Video MECHANICAL ADJUSTMENT MANUAL
TYPE3 (O' MECHANISM)".

• For electrical adjustment;
refer to CCD-F40/F340 service manual.

SECTION 1 GENERAL

1-1. NOTES

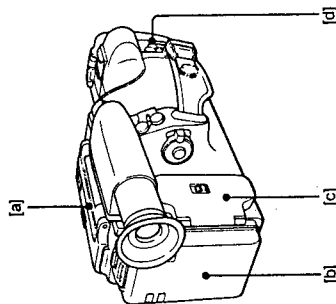
- The splash-proof CCD-SP5/SP7 has some resistance to water and moisture and makes it possible to use the unit outdoors. Exposure to water and moisture is not recommended.
 - For "once-only" events, it is strongly recommended to have a trial run to check that everything is working perfectly.
 - Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.
 - PCM recording/playback is not possible with this unit. The PCM sound recorder cannot be played back with this unit.
 - For using the recorder abroad, see page 112.
 - The following units are packed with the CCD-SP5/SP7 video camera recorder.
 - Battery pack NP-55
 - Battery pack holder NPA-SP7
 - AC power adaptor AC-V30
 - RFU adaptor RFU-89UCKA
 - Shoulder strap
 - Cassette tape
- For details on these units, please read their instruction manuals.

This unit uses 8 mm video format cassettes. It records in the SP mode (approximately 1.43 cm/second) and can play back in the SP mode and the LP mode (approximately 0.72 cm/second). The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

1-2. NOTES ON USE ON THE SEA OR AT THE BEACH

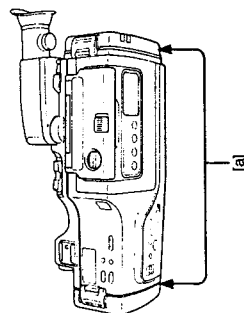
On Operation

- Do not use the unit under water.
- Avoid opening the top cover [a], the battery cover [b], the jack cover [c] or the lens cover [d] on the sea or at the beach. A-1
- Operations such as installing and changing a cassette tape or the battery should be done in a place with low humidity and no sea breeze.
- The splash-proof integrity of the unit is maintained by the battery cover, the lens cover, the top cover, the jack cover and the rubber gasket. Be especially careful not to damage or deform those areas.
- If you cannot avoid leaving the unit in the sun, be sure to cover it with a towel or similar.
- Do not throw the unit into the water.
- Do not change a battery with a wet hand.
- Before opening the buckle or the cover, clean the unit with a dry soft cloth.
- Before recording, clean the lens cover.



On the rubber gasket A-2

- The rubber gaskets [a] assure the splash-proof function of this unit. To maintain splash-proof integrity, handle them properly. Incorrect operation may cause water leakage.
- Check that there are no scratches or cracks on the rubber gaskets. Scratches or cracks may cause water leakage.
- Remove foreign materials such as dust and sand completely from the rubber gaskets and the grooves and the surfaces of the body in contact with the rubber gasket.
- Useful life of the rubber gasket depends upon maintenance and the frequency of use, but we recommend changing them once a year at your Sony service facility.



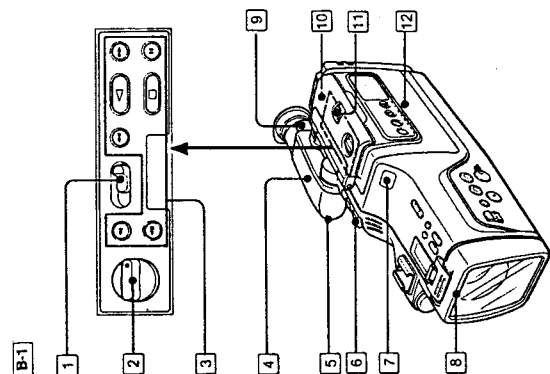
On Cleaning

After recording at a location subject to sea breezes, clean the unit with a soft cloth lightly moistened with mild detergent solution. If water drops remain on the unit, the metal parts may rust. Do not wash the unit under running water or use any type of solvent, such as alcohol or benzene for cleaning, as this might damage the finish.

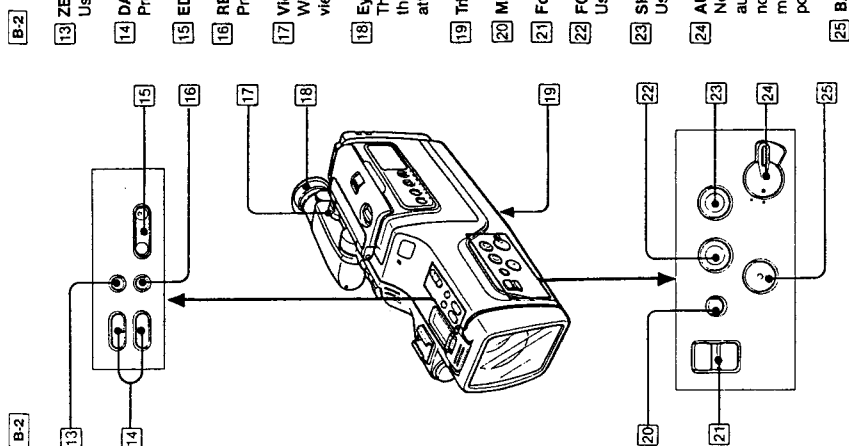
Sony does not accept liability for damage to the video camera recorder, battery, etc. or for cost of recording if water leakage occurs as a result of incorrect operation.

1-3. LOCATION AND FUNCTION OF PARTS AND CONTROLS

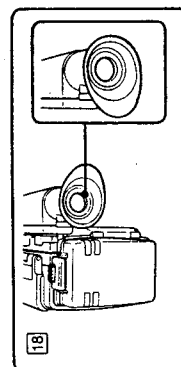
For details on the use of each control, refer to the pages indicated in the circle.

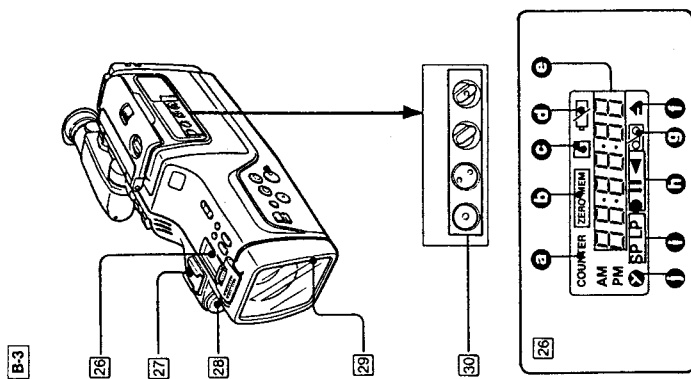


- 1** ● REC (recording) switch
Slide in the direction of the arrow.
- 2** POWER switch
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off
- 3** Tape transport buttons
◀ (playback)
▶▶ FF (fast forward)
◀◀ REW (rewind)
■ (stop)
|| (pause)
◀|| (frame-by-frame)
◀|| (slow)
- 4** Viewfinder
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.
- 5** Camera recording/battery lamp
Lights during camera recording. It blinks when the battery is exhausted.
- 6** Power zoom button
- 7** White balance sensor
This is the sensor for auto white balance adjustment.
During recording, do not cover the sensor.
- 8** Lens cover
- 9** Viewfinder lens adjustment ring
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.
- 10** EJECT (cassette eject) button
Located inside the top panel cover.
- 11** Top cover open button
- 12** Cassette holder



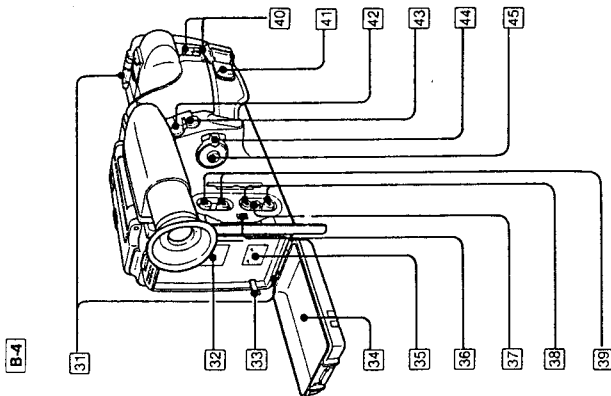
- 13** ZERO MEM (zero memory) button
Used to memorize the counter zero point.
- 14** DATE and TIME SET buttons
Press to display or turn off the date or time.
- 15** EDIT/SEARCH buttons
- 16** RESET button
Press to reset the counter to zero.
- 17** Viewfinder lock lever
While pressing this lever, turn up the viewfinder.
- 18** Eyecup
The eyecup is attached for the right eye. For the left eye, detach the rubber eyecup and attach it as illustrated.
- 19** Tripod receptacle
- 20** MACRO set button
- 21** Focus adjustment button
- 22** FOCUS button
Used for manual focusing.
- 23** SHUTTER SPEED button
Used to select the shutter speed.
- 24** AUTO LOCK switch
Normally set to the AUTO LOCK position for auto focusing, automatic iris adjustment and normal shutter speed. To adjust these items manually, set this switch to the upper position.
- 25** BACK LIGHT button





B-3

- 26 Display window
- 27 COUNTER indicator
- 28 ZERO MEM (memory) indicator
- 29 Moisture condensation inside the unit.
- 30 Blinks when the battery is weak.
- 31 Indicates the time or the tape count.
- 32 Blinks when moisture has condensed on the tape, when the tape approaches its end during camera recording.
- 33 Lights steadily when no cassette is inserted.
- 34 Blinks when the tape approaches its end.
- 35 Tape operation mode indicators
- 36 Tape speed indicator
- 37 Lights when the slit in the head is clogged.
- 38 Accessory shoe
- 39 Attach an optional external microphone, video light, etc.
- 40 Built-in microphone (monaural)
- 41 Infrared beam emitter and detector
- 42 Transmits an infrared beam toward the object to be shot and receives the beam reflected from the object during auto focusing. Do not look into it for a long time when recording with auto focusing. Do not cover here.
- 43 SUPERIMPOSE buttons
- 44 Used to record the title.
- 45 TITLE 1 button
- 46 TITLE 2 button
- 47 MEMORY button
- 48 COLOR button



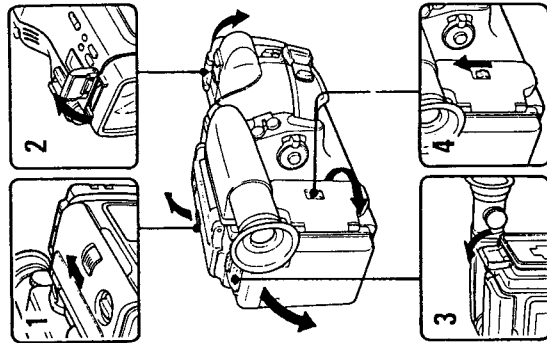
B-4

- 31 Hooks for shoulder strap
- 32 Attach a shoulder strap.
- 33 Be careful that the shoulder strap does not cover the white balance sensor, built-in microphone or lens.
- 34 Lithium battery compartment
- 35 BATT (battery eject) knob
- 36 Battery cover
- 37 Battery mounting surface
- 38 EDIT switch
- 39 Normally set it to the upper position. When editing tapes, set to EDIT.
- 40 RFU DC OUT (RFU adaptor DC output) jack (special minijack)
- 41 Supplies power to the RFU-89UCKA RFU adaptor.
- 42 VIDEO/AUDIO OUT (output) jacks (phono jacks)
- 43 VIDEO/AUDIO IN (input) jacks (phono jacks)
- 44 MIC jack and DC OUT (microphone power output) jack
- 45 Connect an external microphone.
- 46 The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.
- 47 Grip strap
- 48 earphone jack (minijack)
- 49 REMOTE connector (stereo mini-minijack)
- Note
- 50 The earphone jack and REMOTE connector are not splash-proof.
- 51 STANDBY switch
- 52 Set to STANDBY to set the unit to recording pause mode.
- 53 START/STOP button
- 54 Press to start and stop camera recording.

1-4. TO OPEN EACH SPLASH-PROOF COVER

- 1 Top cover**
- To insert or eject the cassette.
- Slide the OPEN button on the top cover in the direction of the arrow.
- 2 Lens cover**
- To clean the lens.
 - To attach the filter or conversion lens.
- Release the buckle.
- 3 Battery cover**
- To install or remove the battery pack.
 - To use the AC power adaptor or battery pack holder
- Release the buckle and turn the cover 180 degrees down. The battery cover is removed. To attach the battery cover, hook the bottom of the battery cover on the catches of the video camera recorder.
- 4 Jack cover**
- To connect the equipment to be used with this unit.
- Slide the LOCK/RELEASE button to the RELEASE position arrow.

C

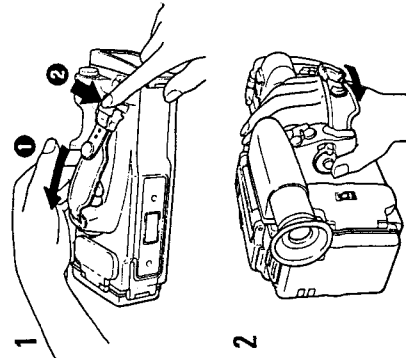


1-5. ADJUSTING THE GRIP STRAP

Adjust the length so that your thumb can easily manipulate the START/STOP button, **D**

D

- 1 Loosen the grip strap.**
- 1 Pulling the strap,
 - 2 push to unfasten the stopper.
- 2 Pull to adjust the length of the strap.**



1-6. CHECK LIST BEFORE RECORDING

To make sure you don't miss those "once in a lifetime" scenes, go over the following check list and make the necessary preparations.

Required for recording

CCD-SP5/SP7
Battery pack NP-55 or NP-77

Is it charged?
Are there enough battery packs to cover the planned recording time?
Have you prepared enough tapes to cover the planned recording time?

Cassette tapes

Convenient accessories

Carrying case
Shoulder strap
Tripod

Required for scenes in which stability of the camera is important. Tripod mount screw must match the receptacle mount.
Used to operate the video camera recorder on house current and to charge battery packs

AC power adaptor

RFU adaptor RFU-89UCKA

Adaptor for connection to a TV or VTR which is not equipped with video/audio inputs.

Video light HVL-50DU

Required for recording in low light situations.
Earphone (miniplug) Permits monitoring of audio signal during recording.

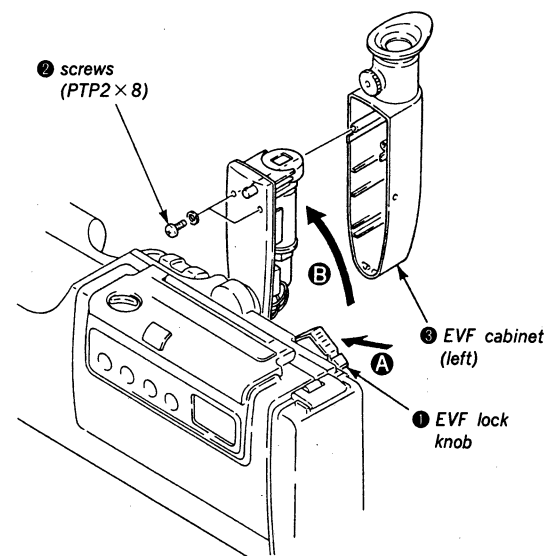
SECTION 2 DISASSEMBLY

Refer to CCD-F40/F340 service manual for the following items.

- REMOVING THE LS LID
- OPENING THE VA-40 BOARD
- OPENING THE SS-86 BOARD
- REMOVING THE CASSETTE ARM
- REMOVING LS CASSETTE COMPARTMENT ASSEMBLY

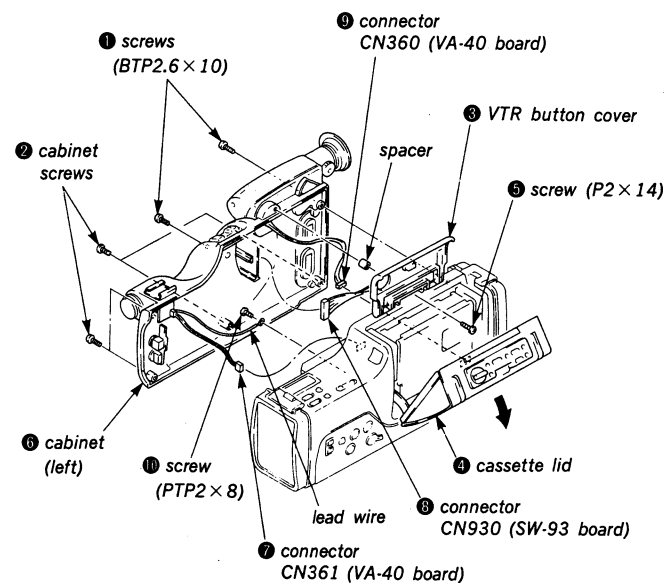
2-1. REMOVING THE VIEWFINDER

- 1) Raise set up the Viewfinder assy from the unit in the direction of arrow **B**.
While sliding the EVF lock knob **1** in the direction of arrow **A**.
- 2) Remove two screws **2**.
- 3) Remove the EVF cabinet (left) **3**.



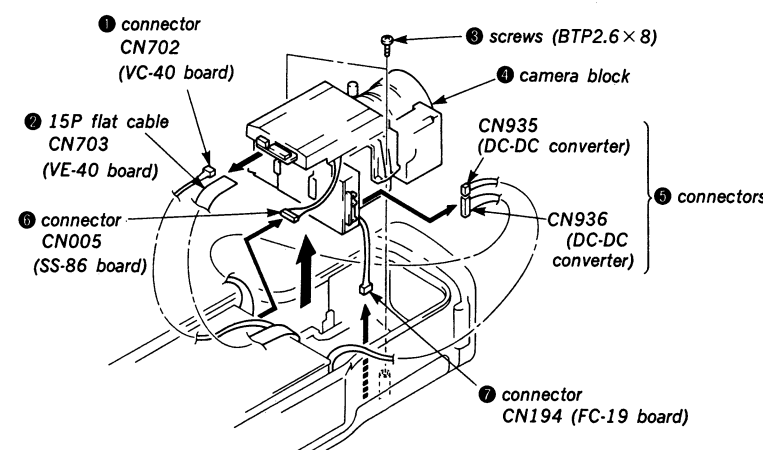
2-2. REMOVING THE CABINET (LEFT)

- 1) Remove two screws **1**.
- 2) Remove four screws **2**.
- 3) Remove the VTR button cover **3**.
- 4) Opening the Cassette lid **4** in the direction of arrow.
- 5) Remove screw **5**.
- 6) Remove the Cabinet (left) **6**.
- 7) Remove three Connector **7** (CN361), **8** (CN930), **9** (CN360).
- 8) Remove Screw **10**.



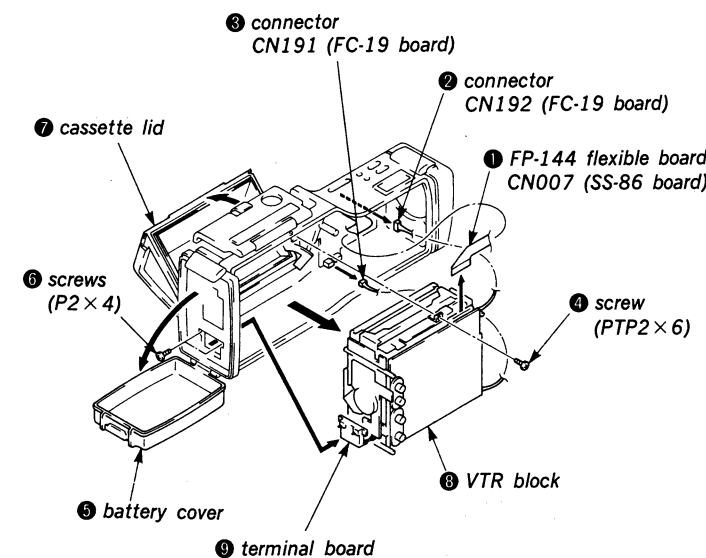
2-3. REMOVING THE CAMERA BLOCK

- 1) Remove two screws **1**.
- 2) Remove the 15P flat cable **2** (CN703).
- 3) Remove screw **3**.
- 4) Remove the camera block **4**, In the direction of arrow.
- 5) Remove two connector **5** (CN935, 936).
- 6) Remove two connectors **6** (CN005), **7** (CN194).



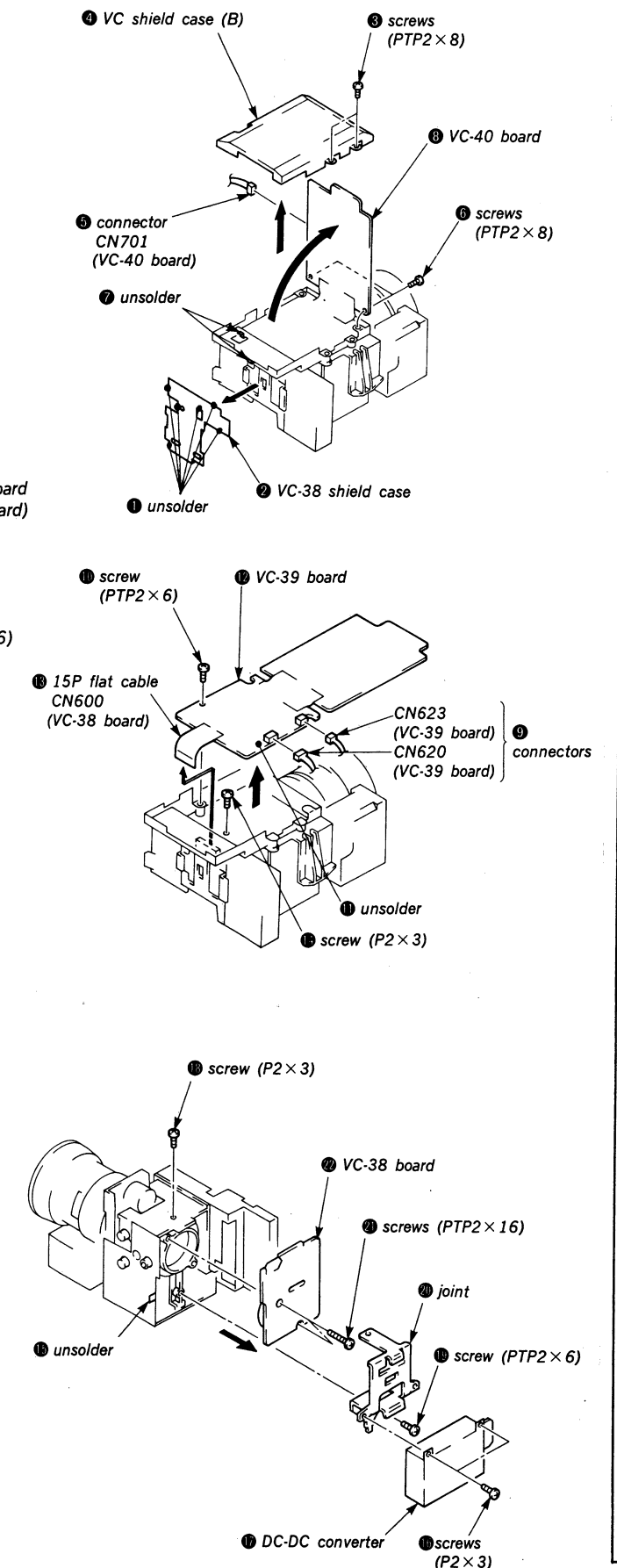
2-4. REMOVING THE VTR BLOCK

- 1) Remove the FP-144 flexible board **1** (CN007).
- 2) Remove two connectors **2** (CN192), **3** (CN191).
- 3) Remove screw **4**.
- 4) Opening the battery cover **5**.
- 5) Remove two screws **6**.
- 6) Opening the cassette lid **7**, in the direction of arrow.
- 7) Remove the VTR block **8**.
- 8) Remove the Terminal board **9**.



2-5. REMOVING THE VC-38 (CCD IMAGER), VC-39 AND VC-40 BOARDS

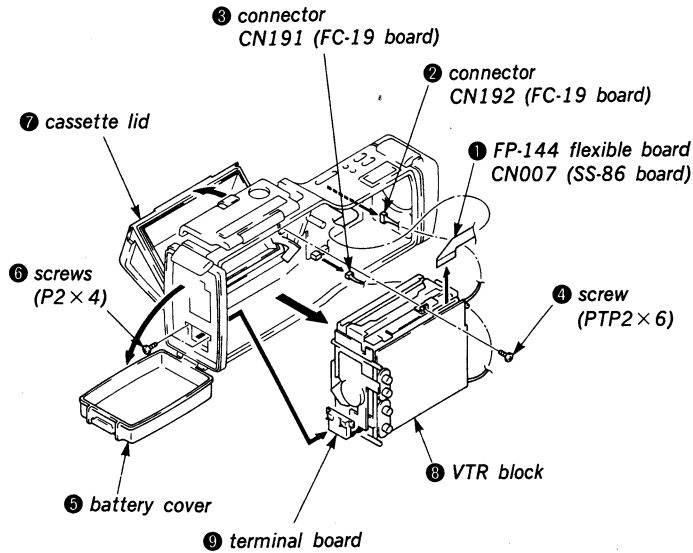
- 1) Unsolder (at six point **1**) the VC-38 shield case **2**.
- 2) Remove two screws **3**.
- 3) Remove the VC shield case (B) **4**.
- 4) Remove the connector **5** (CN701).
- 5) Remove two screws **6**.
- 6) Unsolder at two point **7**.
- 7) Remove the VC-40 board **8**.
- 8) Remove two connectors **9** (CN620, CN623).
- 9) Remove screw **10**.
- 10) Unsolder at one point **11**.
- 11) Remove the VC-39 board **12** in the direction of arrow.
- 12) Remove the 15P flat cable **13** (CN600).
- 13) Remove the screw **14**.
- 14) Unsolder one point **15**.
- 15) Remove two screws **16**.
- 16) Remove the DC-DC converter **17**.
- 17) Remove two screw **18**, **19**.
- 18) Remove the joint bracket **20**.
- 19) Remove two screws **21**.
- 20) Remove the VC-38 board **22**.



SECTION 3
DIAGRAMS

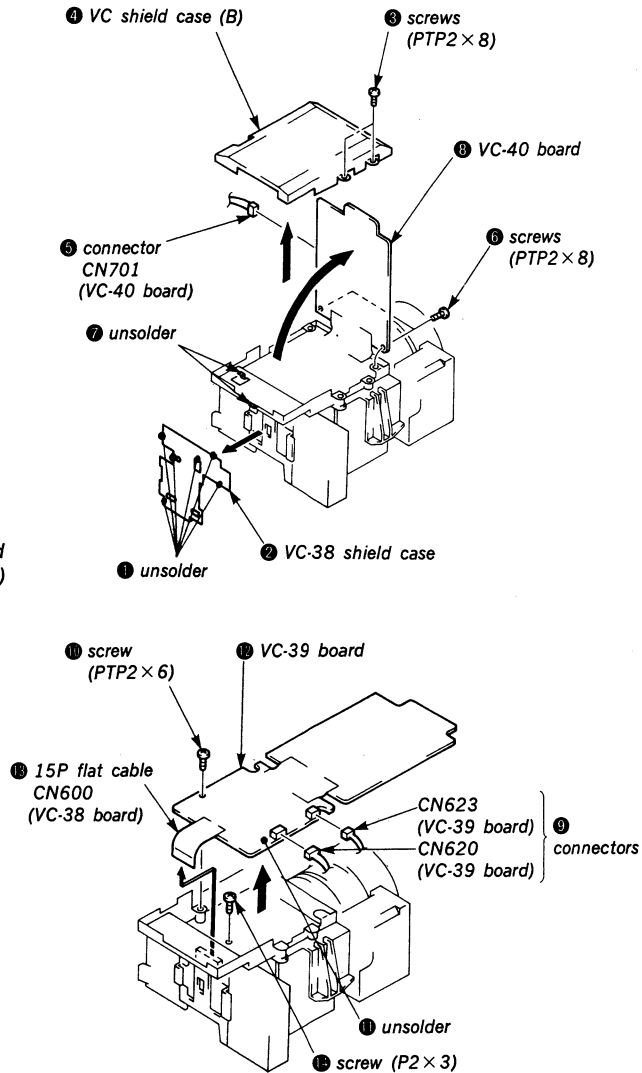
2-4. REMOVING THE VTR BLOCK

- 1) Remove the FP-144 flexible board ❶ (CN007).
- 2) Remove two connectors ❷ (CN192), ❸ (CN191).
- 3) Remove screw ❹.
- 4) Opening the battery cover ❺.
- 5) Remove two screws ❻.
- 6) Opening the cassette lid ❼, in the direction of arrow.
- 7) Remove the VTR block ❸.
- 8) Remove the Terminal board ❹.

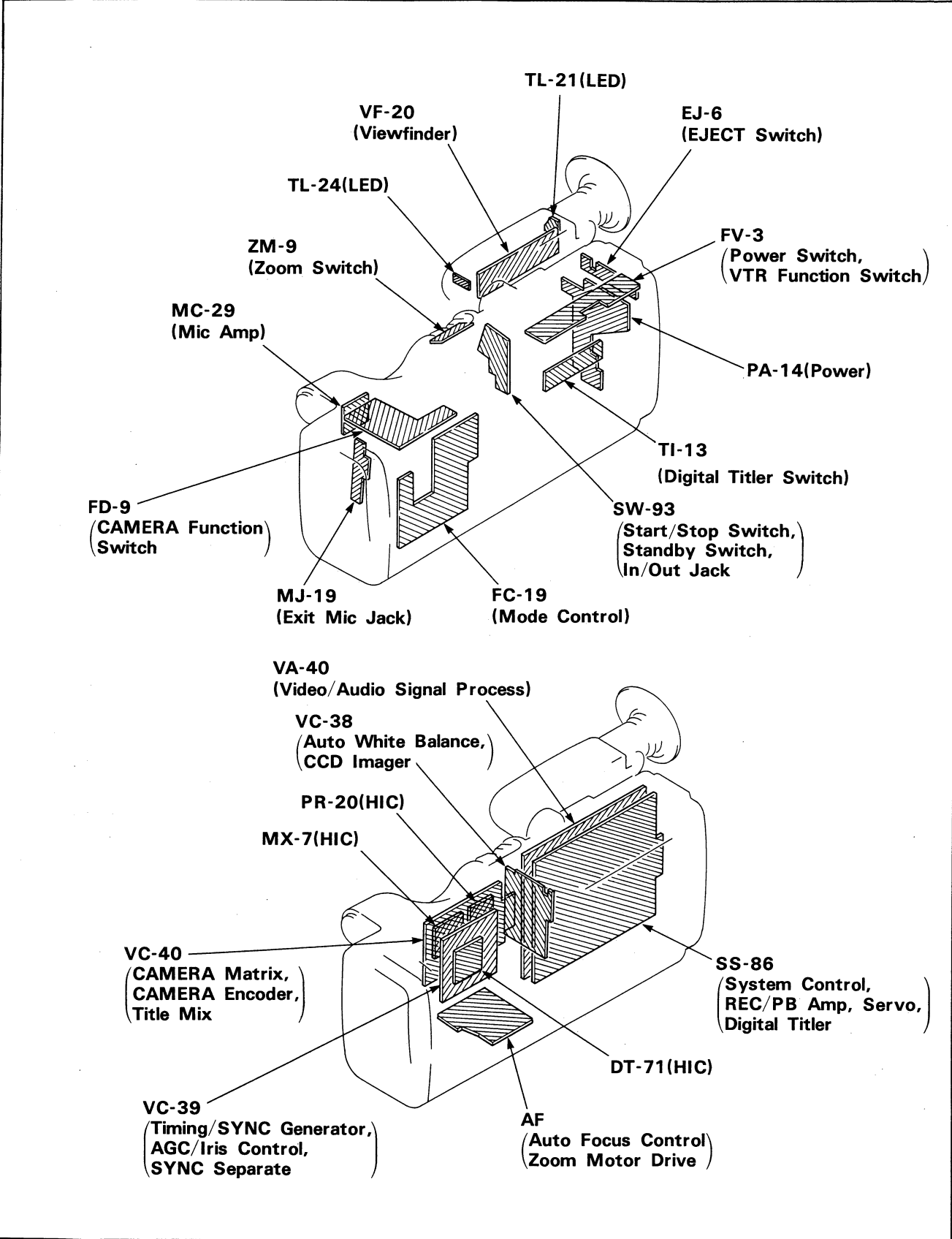


2-5. REMOVING THE VC-38 (CCD IMAGER),
VC-39 AND VC-40 BOARDS

- 1) Unsolder (at six point ❶) the VC-38 shield case ❷.
- 2) Remove two screws ❸.
- 3) Remove the VC shield case (B) ❹.
- 4) Remove the connector ❺ (CN701).
- 5) Remove two screws ❻.
- 6) Unsolder at two point ❼.
- 7) Remove the VC-40 board ❸.
- 8) Remove two connectors ❹ (CN620, CN623).
- 9) Remove screw ❶.
- 10) Unsolder at one point ❶.
- 11) Remove the VC-39 board ❷ in the direction of arrow.
- 12) Remove the 15P flat cable ❸ (CN600).
- 13) Remove the screw ❶.
- 14) Unsolder one point ❶.
- 15) Remove two screws ❶.
- 16) Remove the DC-DC converter ❶.
- 17) Remove two screw ❶, ❶.
- 18) Remove the joint bracket ❶.
- 19) Remove two screws ❶.
- 20) Remove the VC-38 board ❶.



3-1. CIRCUIT BOARDS LOCATION

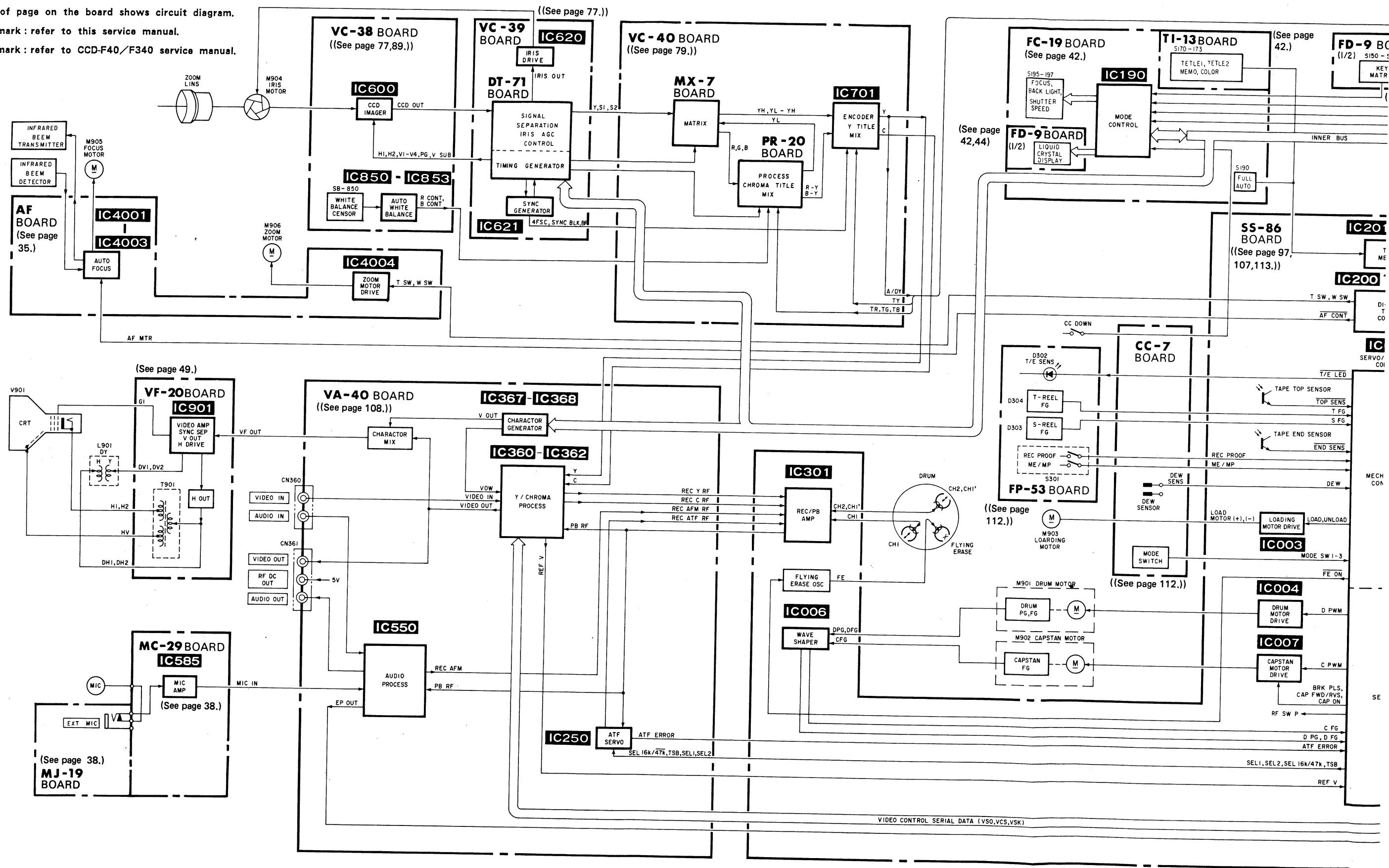


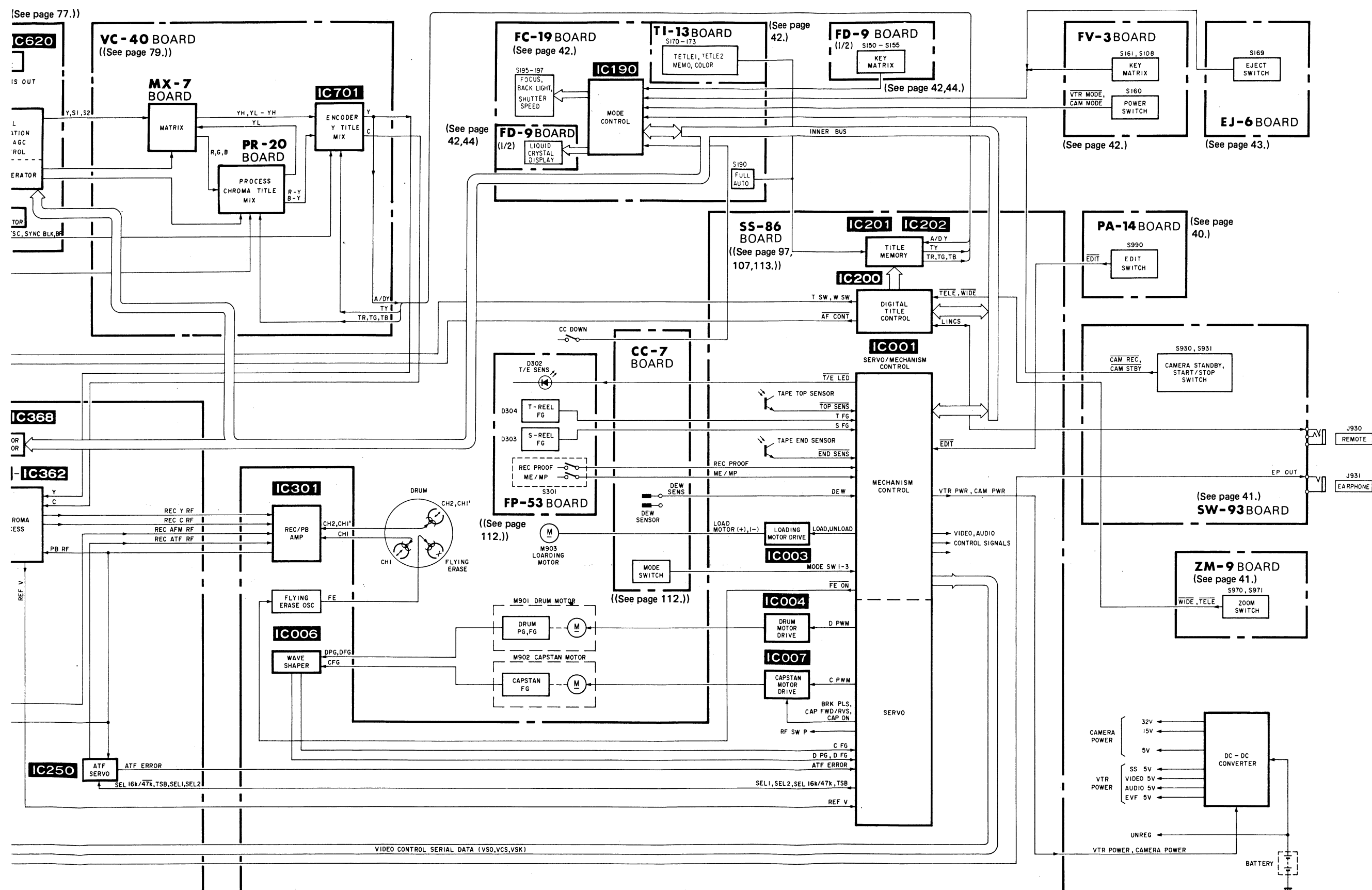
3-2. OVERALL BLOCK DIAGRAM

•Number of page on the board shows circuit diagram.

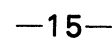
() mark: refer to this service manual.

(()) mark: refer to CCD-F40/F340 service manual.

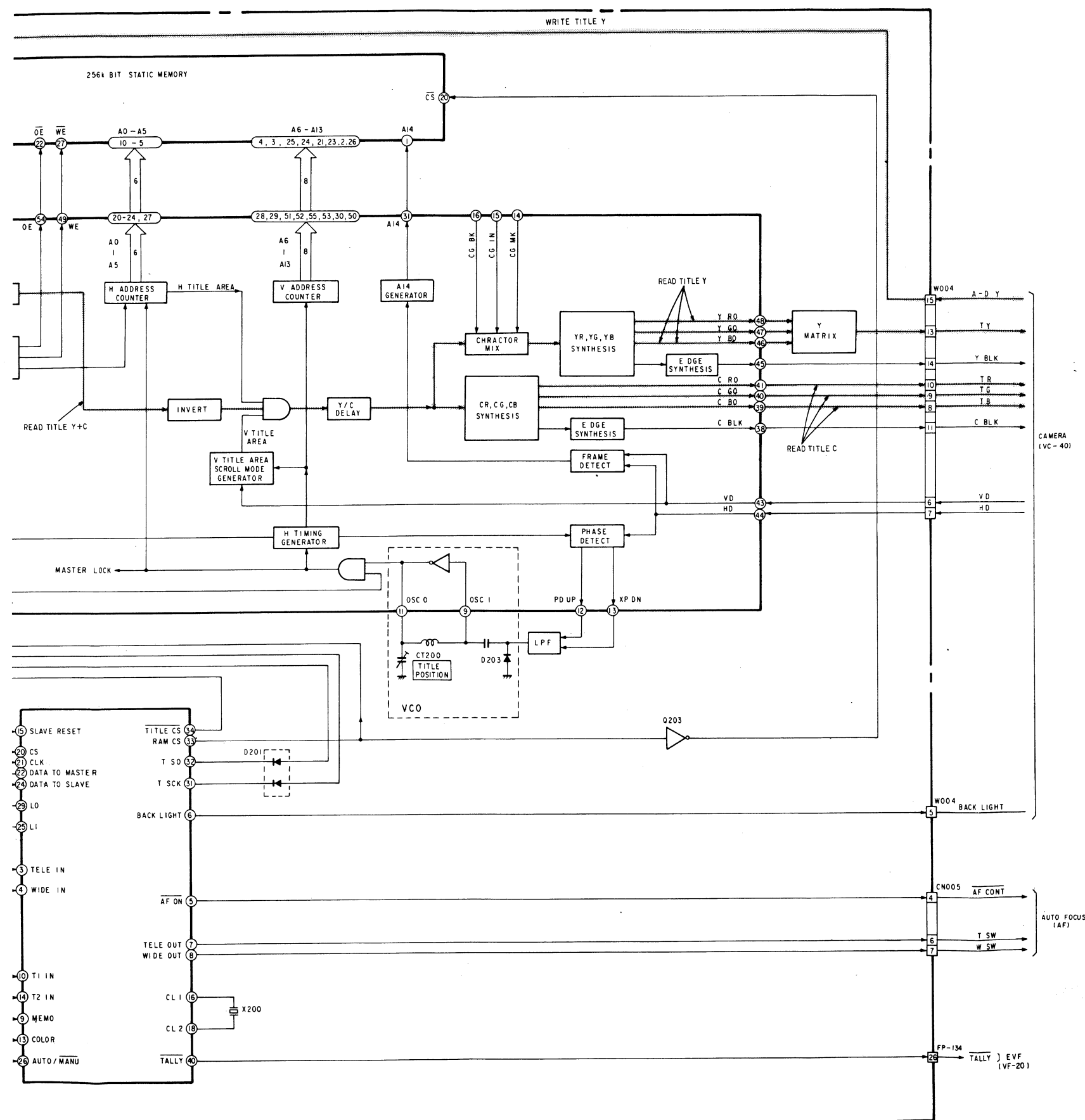




- Number of page on the board shows circuit diagram.
- () mark: refer to this service manual.
- (()) mark: refer to CCD-F40/F340 service manual.



17

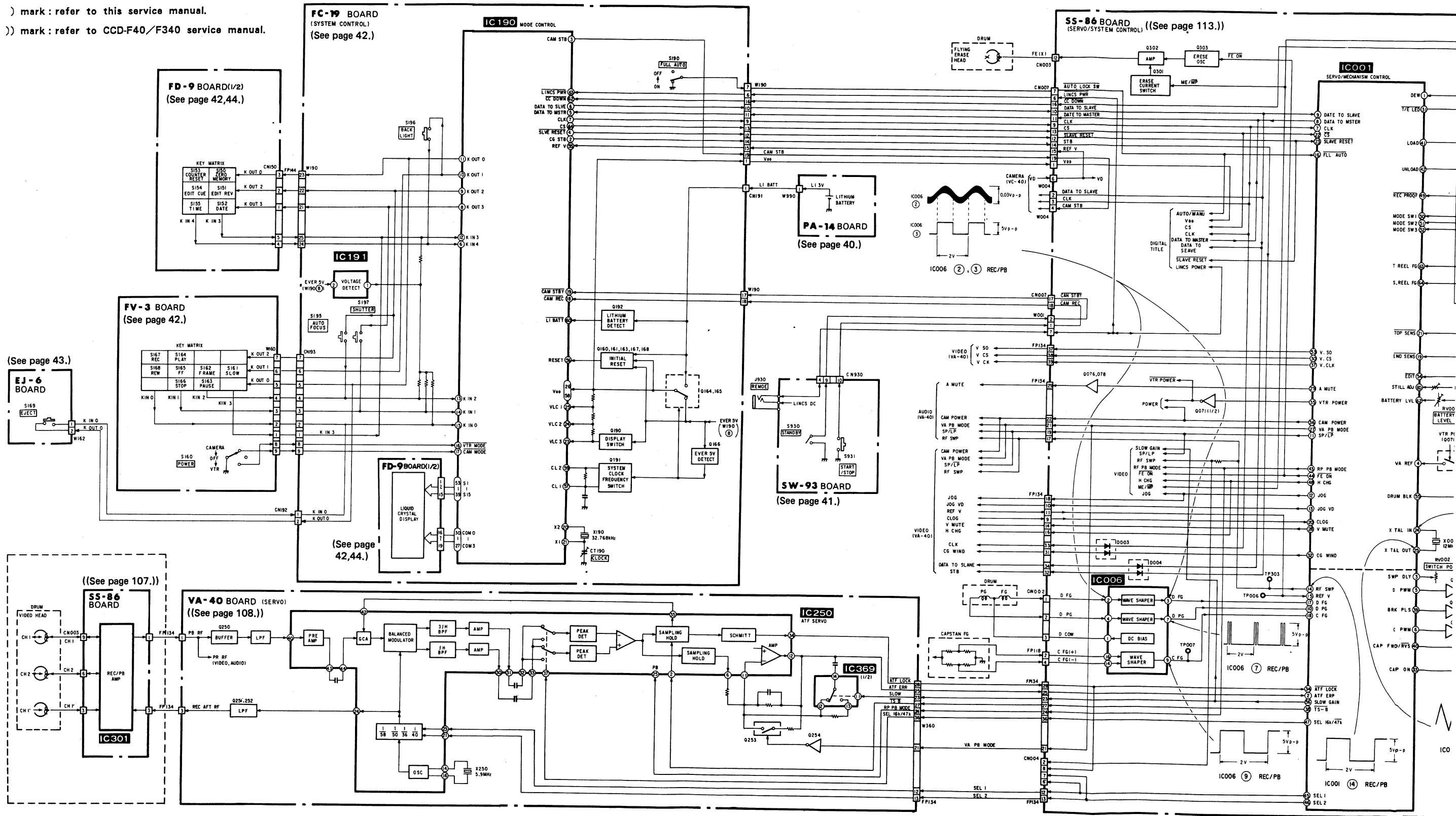


3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM

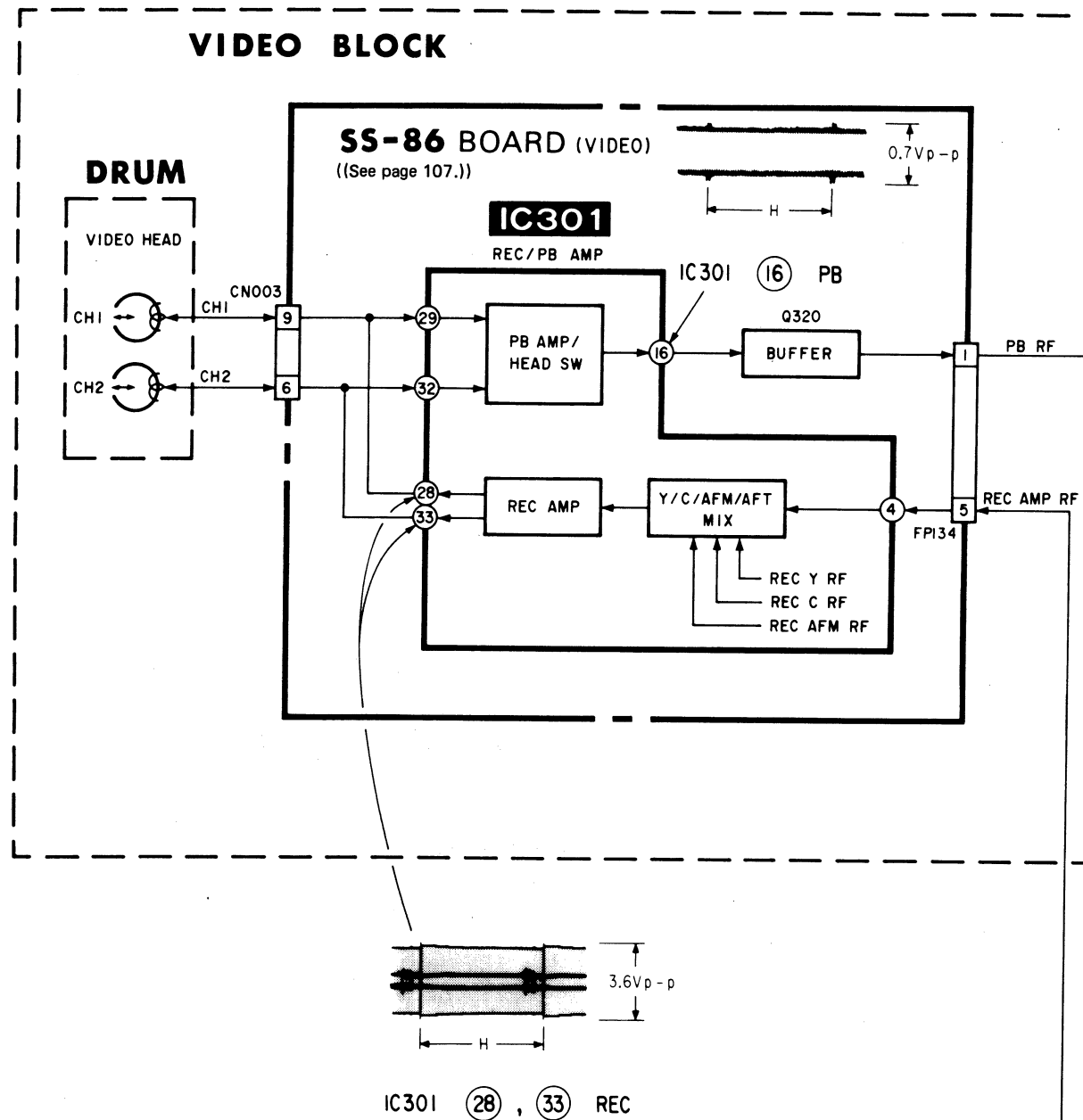
• Number of page on the board shows circuit diagram.

() mark : refer to this service manual.

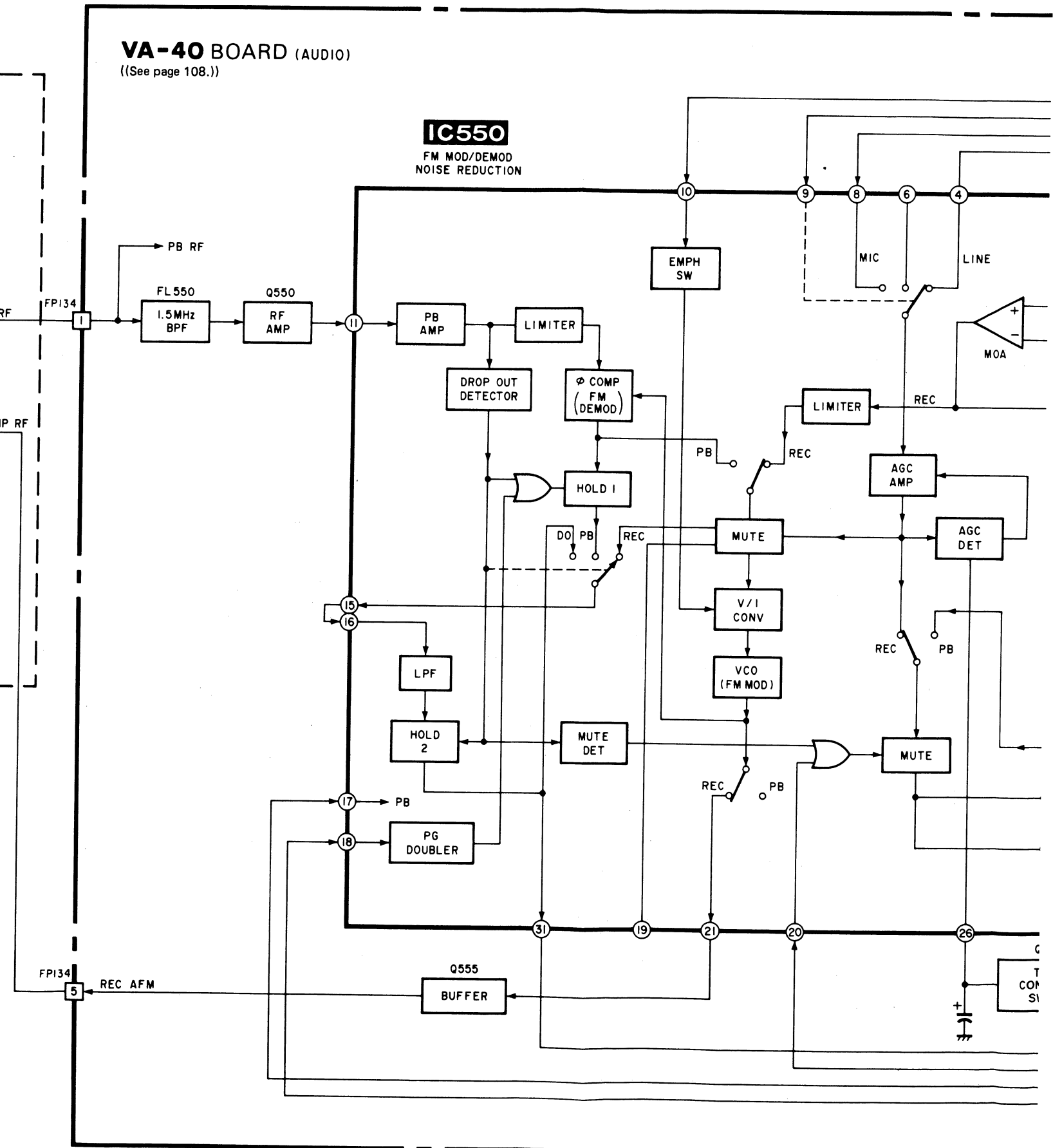
(()) mark : refer to CCD-F40/F340 service manual.

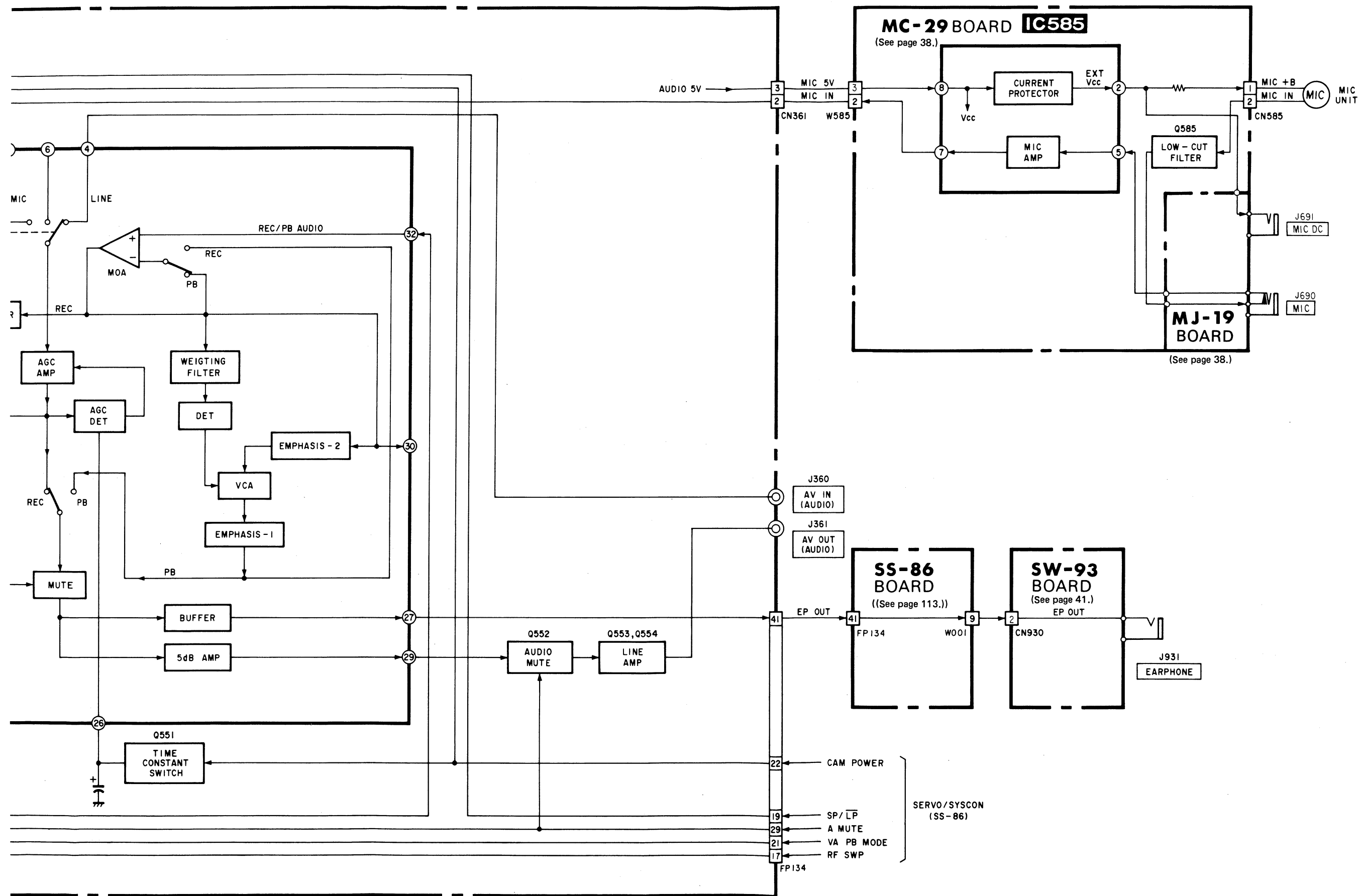


3-5. AUDIO BLOCK DIAGRAM

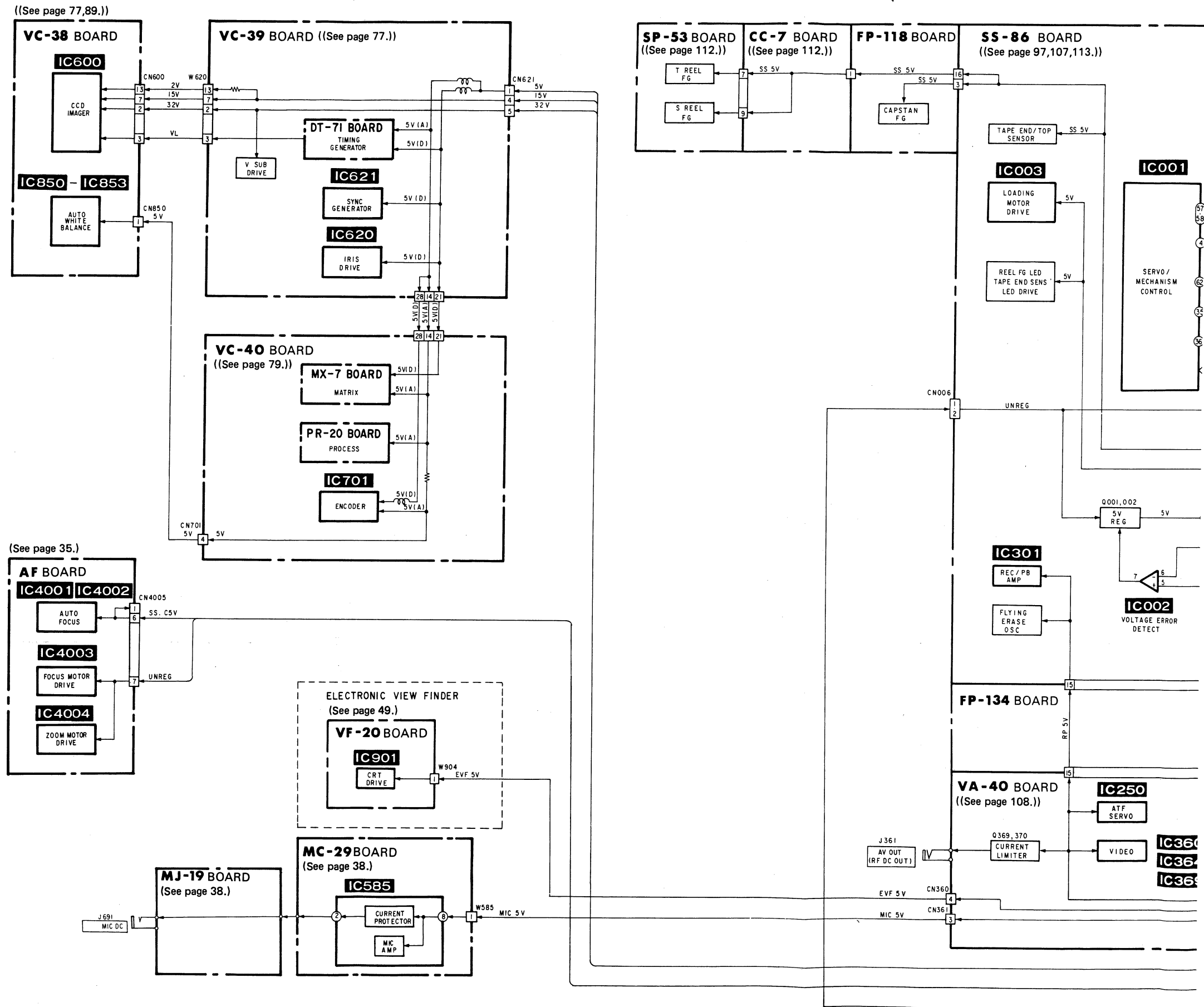


- Number of page on the board shows circuit diagram.
- () mark : refer to this service manual.
- (()) mark : refer to CCD-F40/F340 service manual.





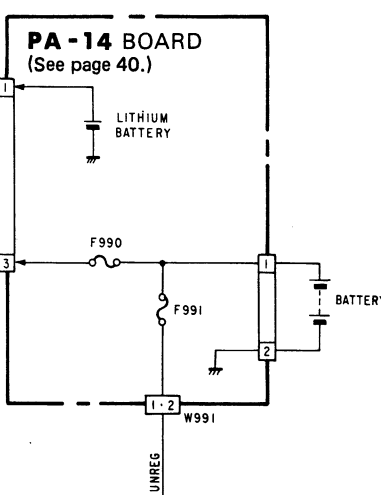
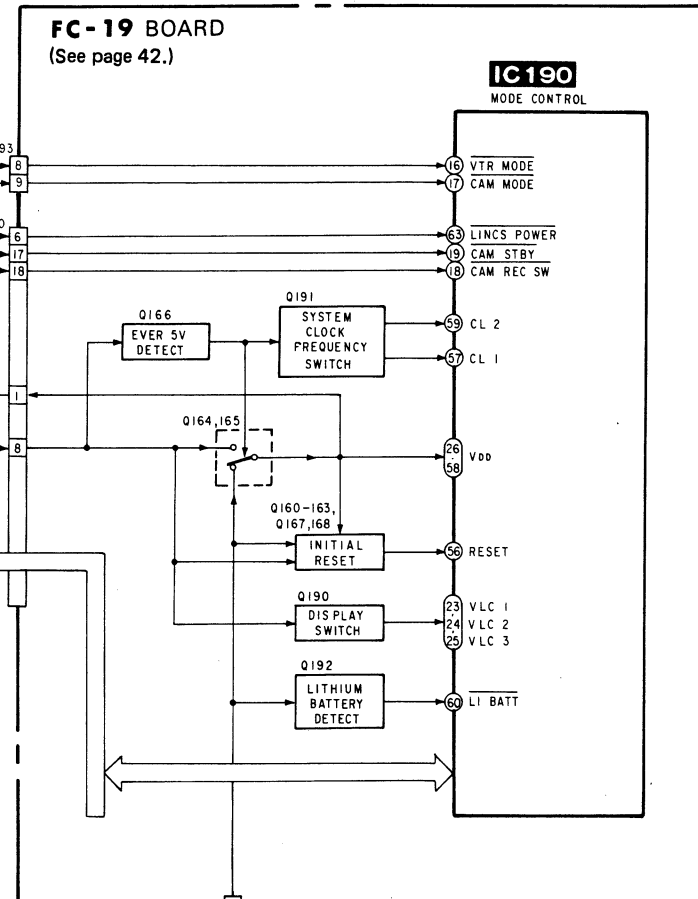
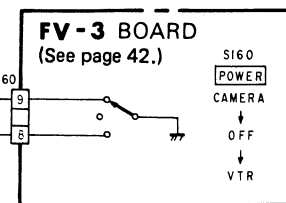
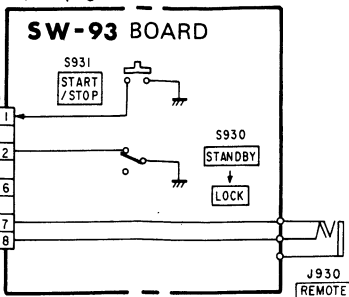
3-6. POWER BLOCK DIAGRAM



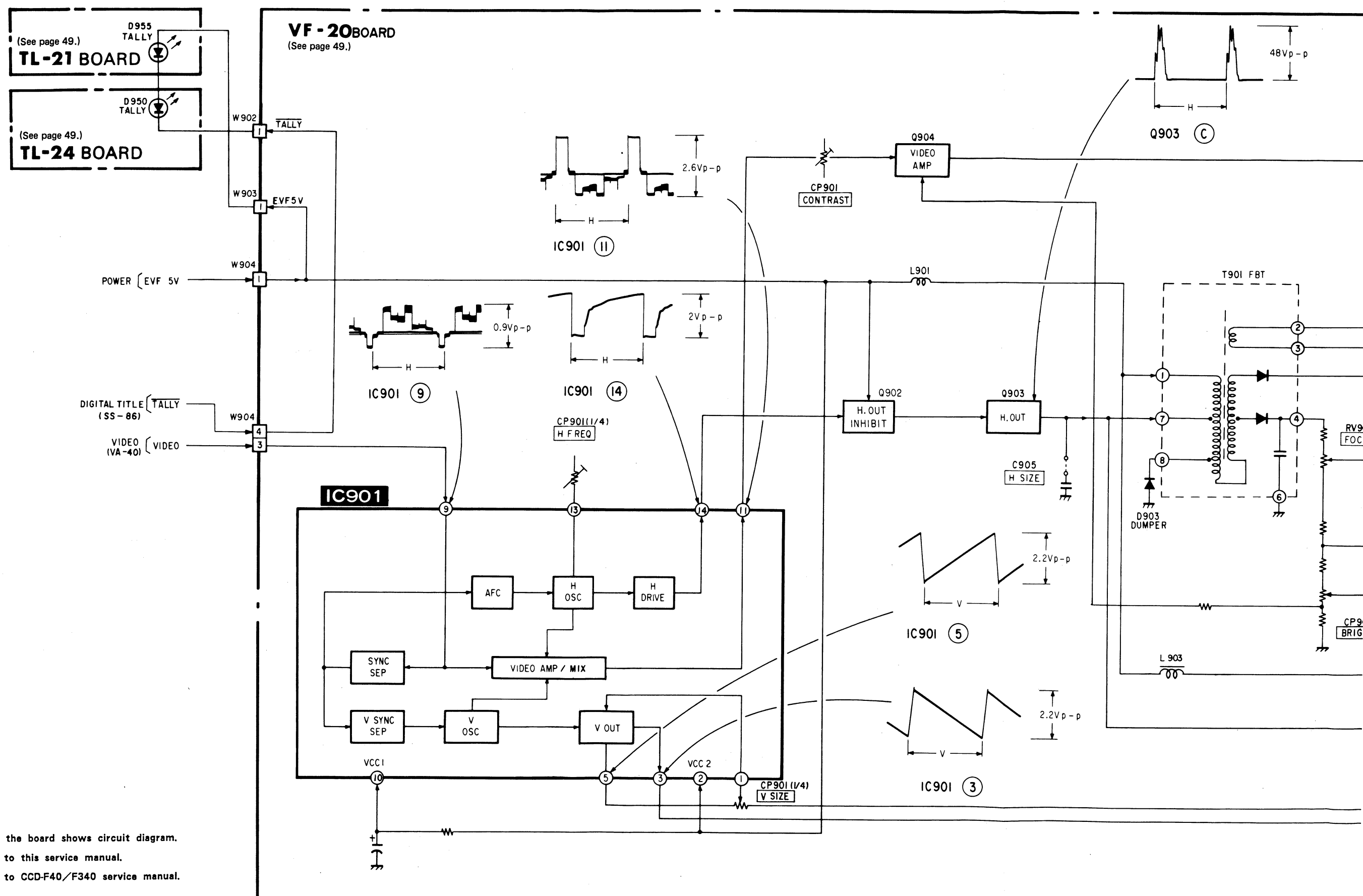
- Number of page on the board shows circuit diagram.

() mark : refer to this service manual.

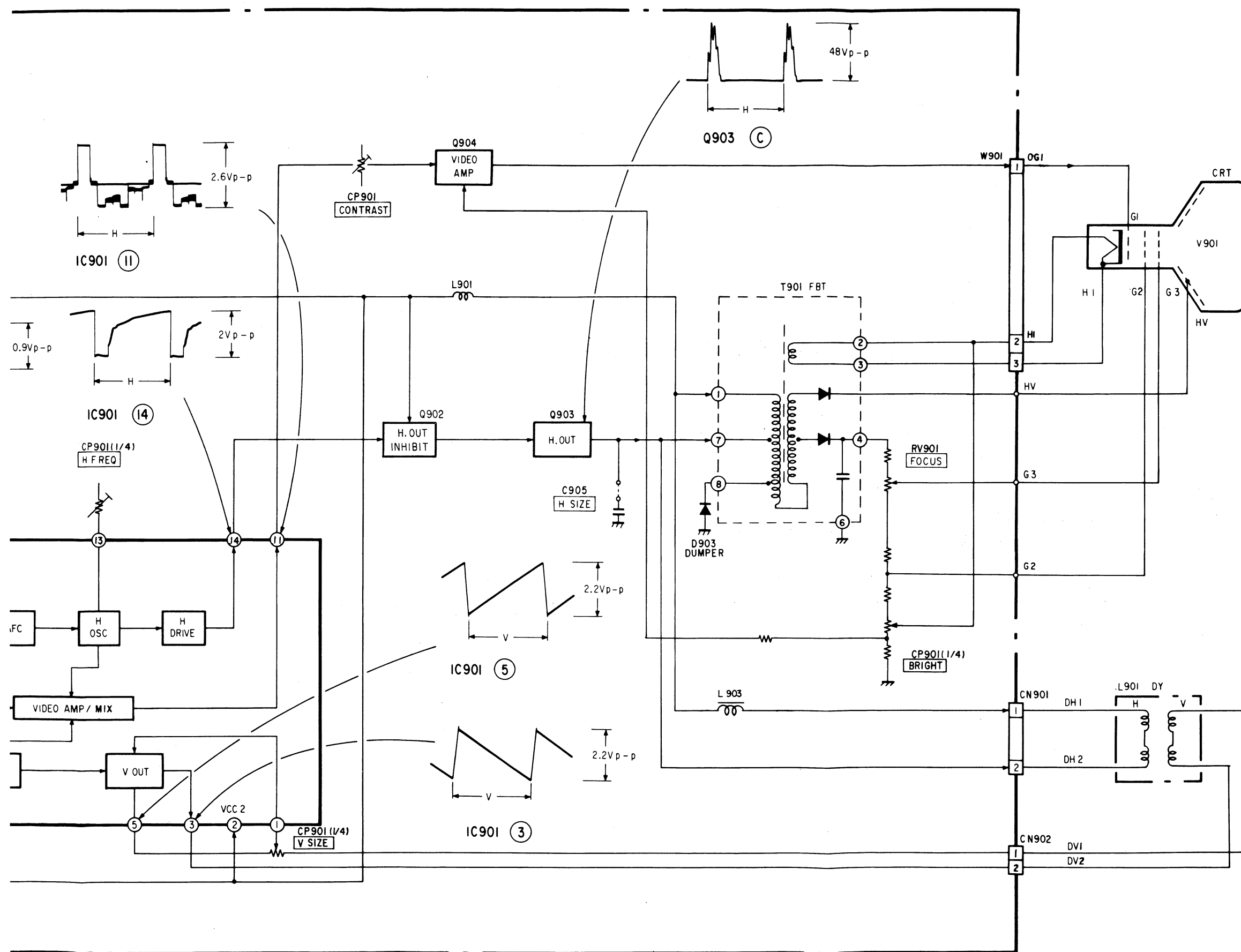
(()) mark : refer to CCD-F40/F340 service manual.



3-7. VIEWFINDER BLOCK DIAGRAM



- Number of page on the board shows circuit diagram.
- () mark : refer to this service manual.
- (()) mark : refer to CCD-F40/F340 service manual.



SECTION 4 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. FRAME SCHEMATIC DIAGRAM

NOTE

THIS NOTES IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

• For printed wiring boards.

- : indicates a lead wire mounted on the component side.
- : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side. *

* Indicated by the color green.

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

• For schematic diagram

- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
- Chip resistor are 1/10W unless otherwise noted.
kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B + Line
- - - : B - Line.
- ⇒ : IN/OUT direction of (+, -) B line.
- * : selected to yield optimum performance.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:
The components identified by mark **A** or dotted line with mark **A** are critical for safety. Replace only with part number specified.

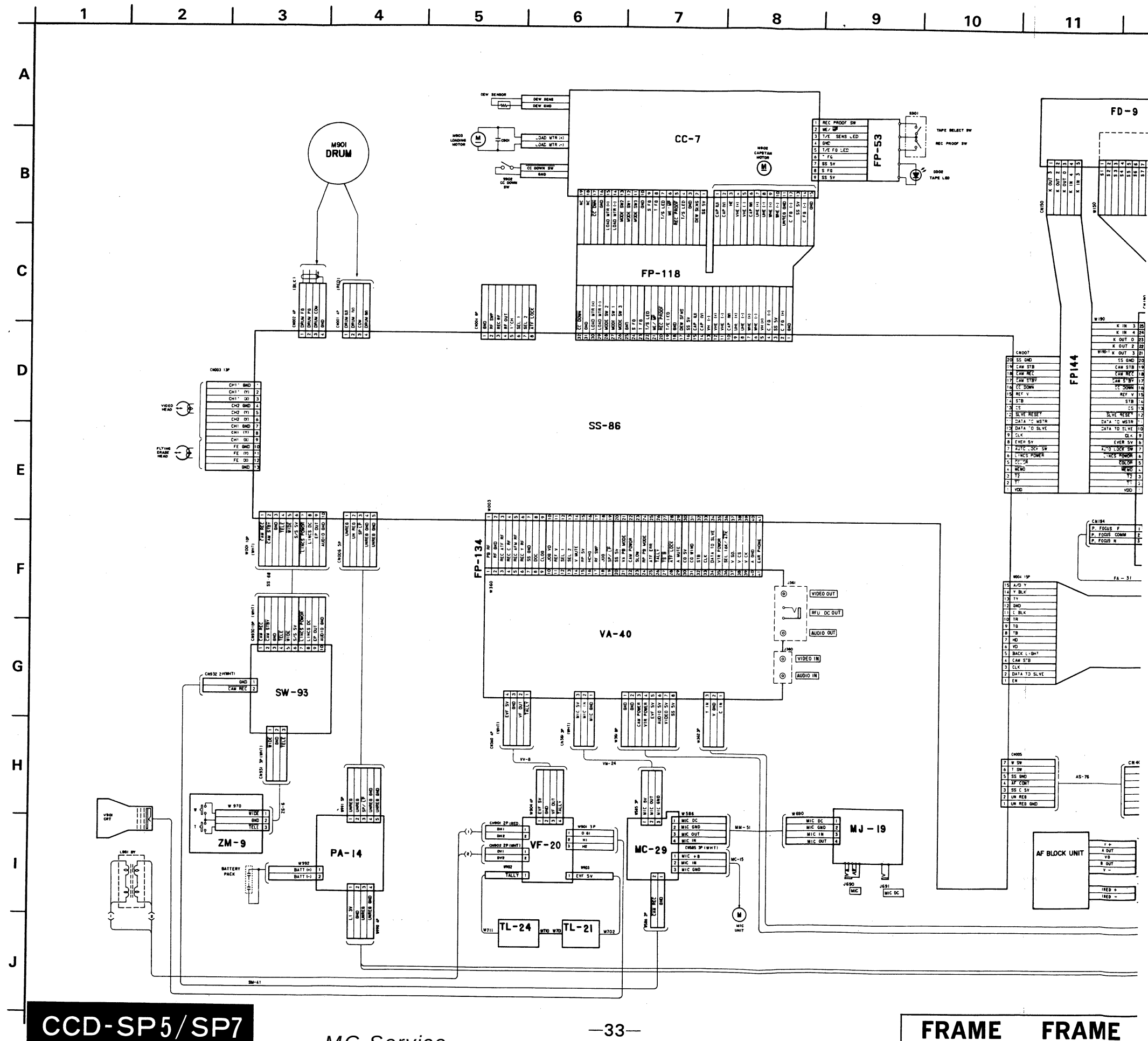
Note:
Les composants identifiés par une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

• Number of page on the board shows circuit diagram.

() mark: refer to this service manual.

(()) mark: refer to CCD-F40/F340 service manual.

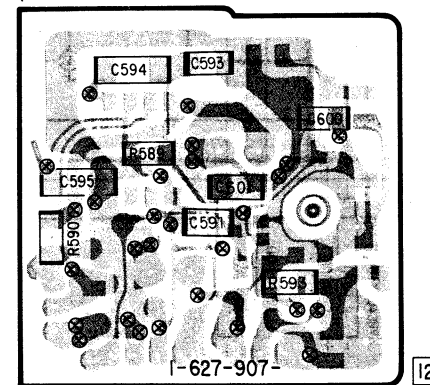
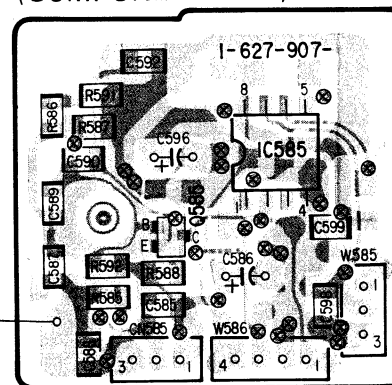
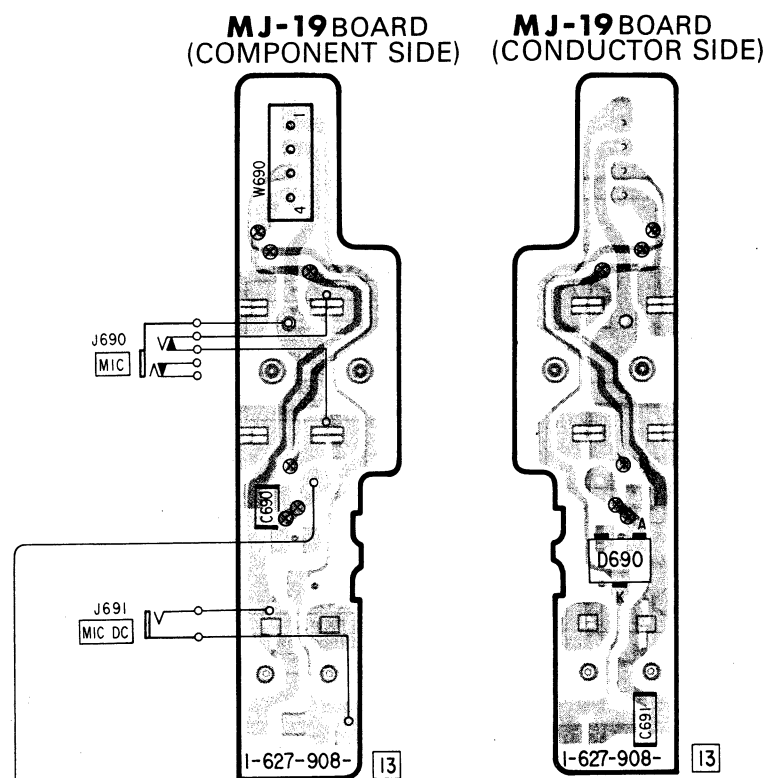


AF (Auto Focus) SCHEMATIC DIAGRAM



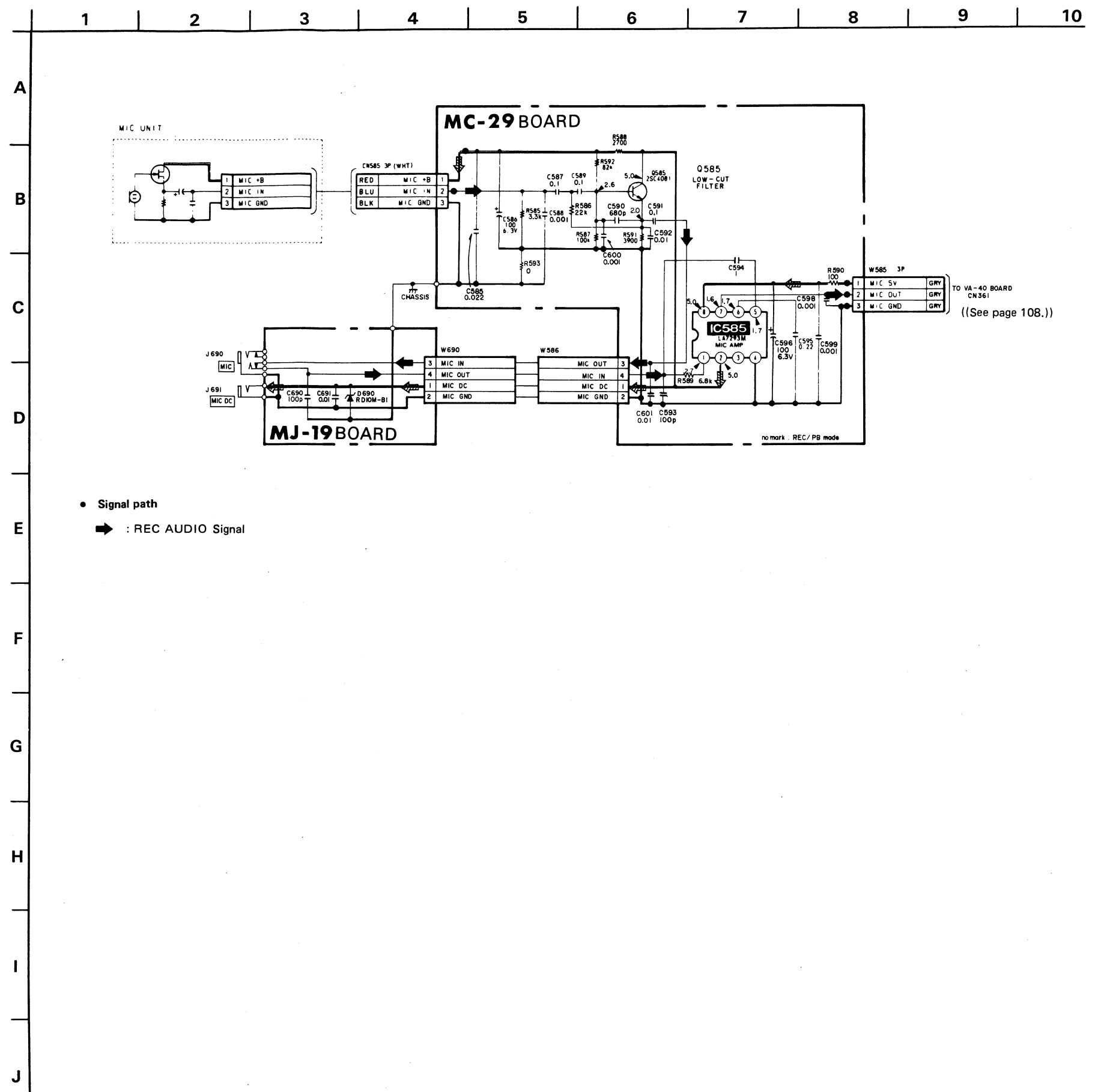
MC-29 (MIC AMP), MJ-19 (EXIT MIC JACK) PRINTED WIRING BOARDS

—Ref. No. MC-29 and MJ-19 BOARDS: 4,000 series—

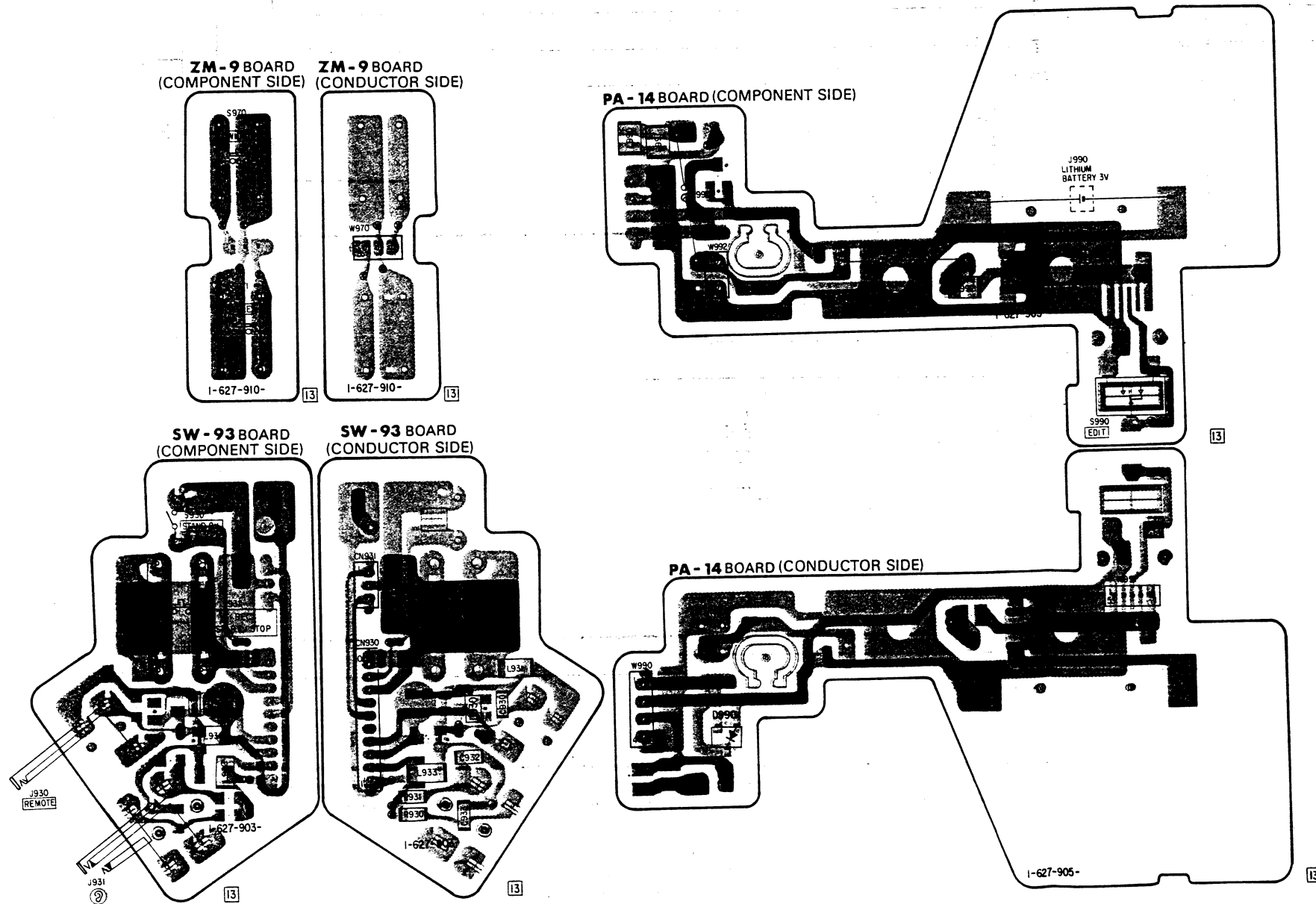


MC-29 (MIC AMP), MJ-19 (EXIT MIC JACK) SCHEMATIC DIAGRAM

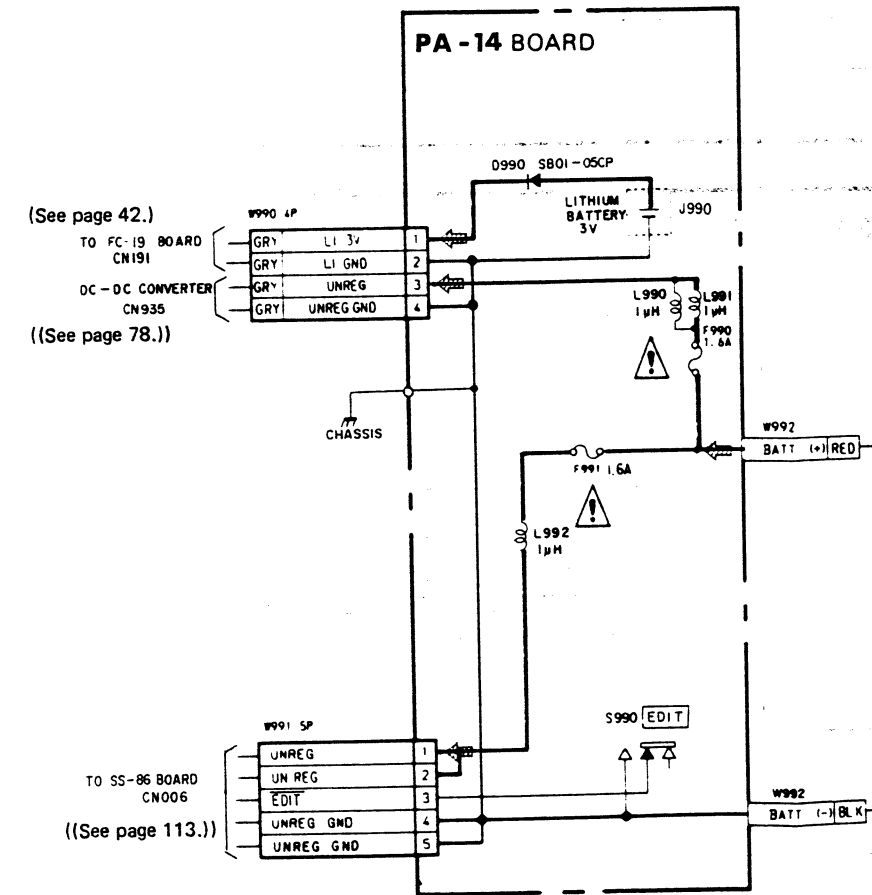
—Ref. No. MC-29 and MJ-19 BOARDS: 4,000 series—

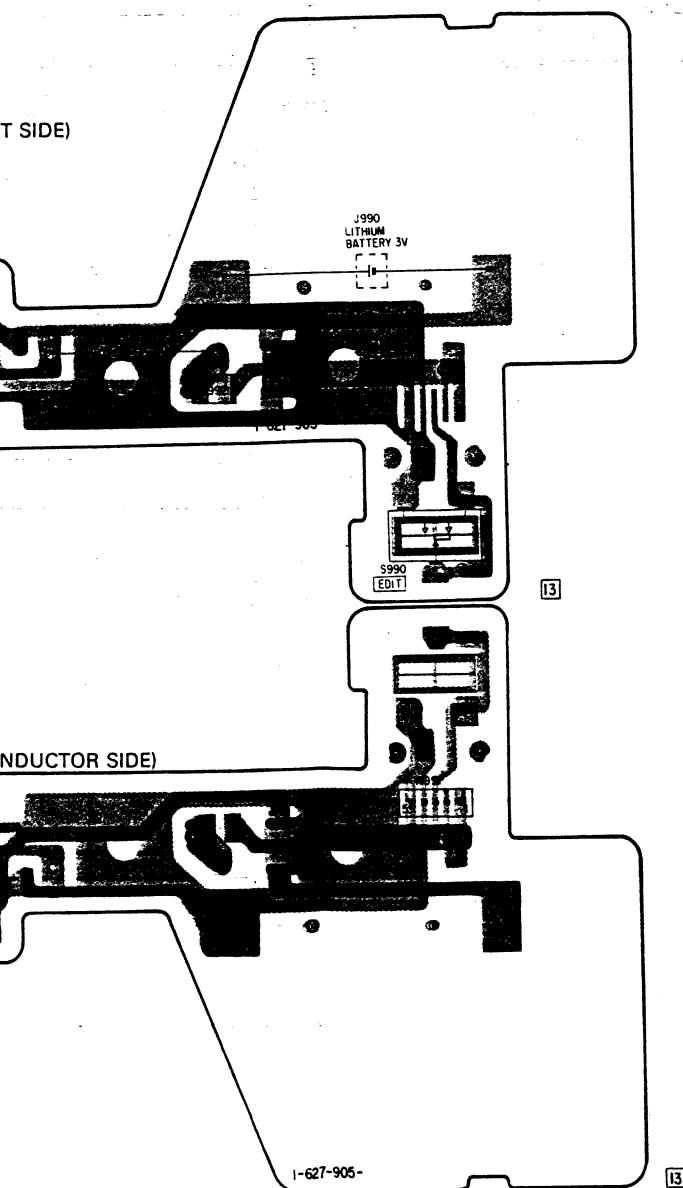


PA-14 (POWER), SW-93 (START/STOP SWITCH, STANDBY SWITCH, IN/OUT JACK), ZM-9 (ZOOM SWITCH) PRINTED WIRING BOARDS
 —Ref. No. SW-93 and ZM-9 BOARDS: 5,000 series, PA-14 BOARD: 6,000 series—

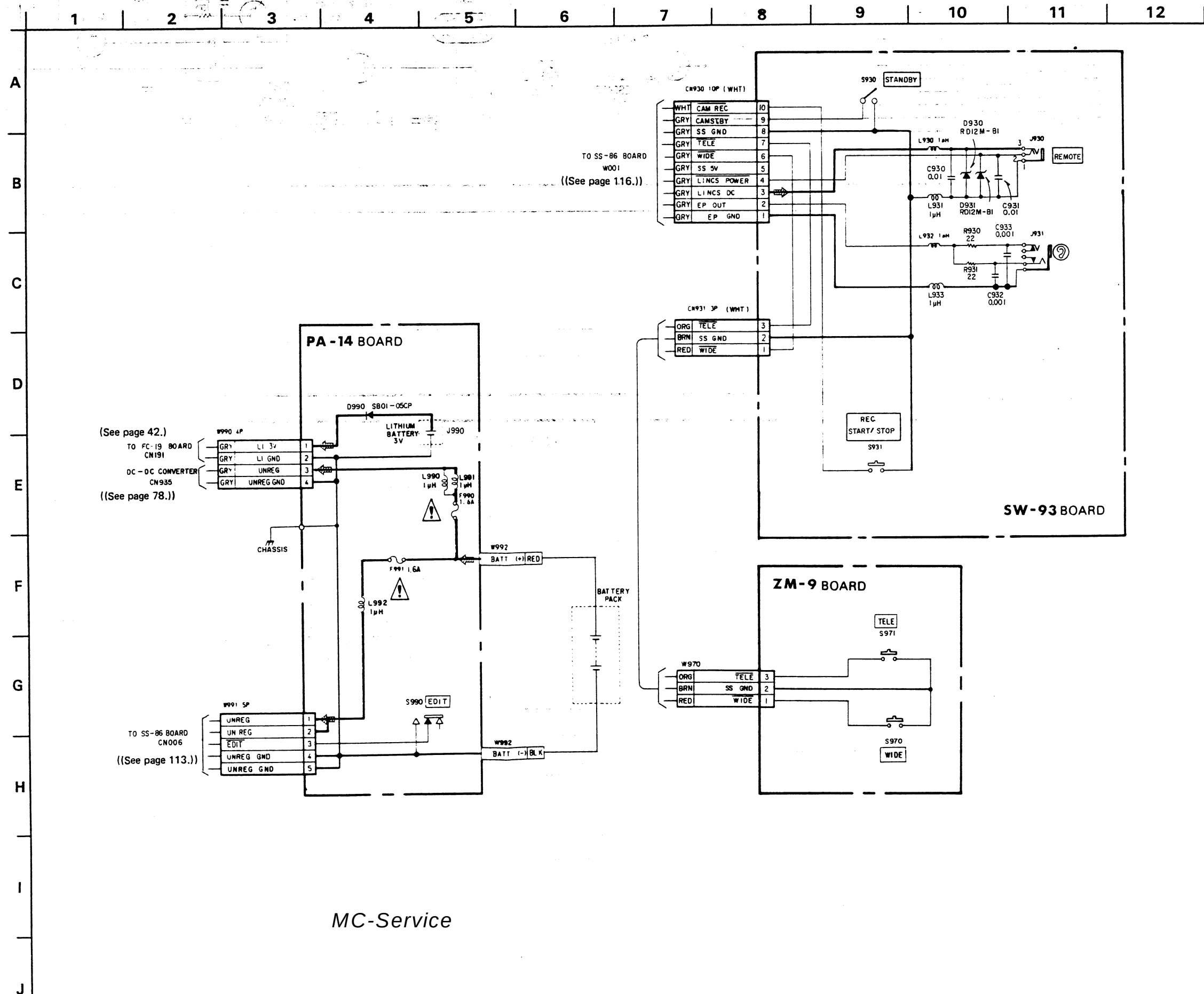


MC-Service

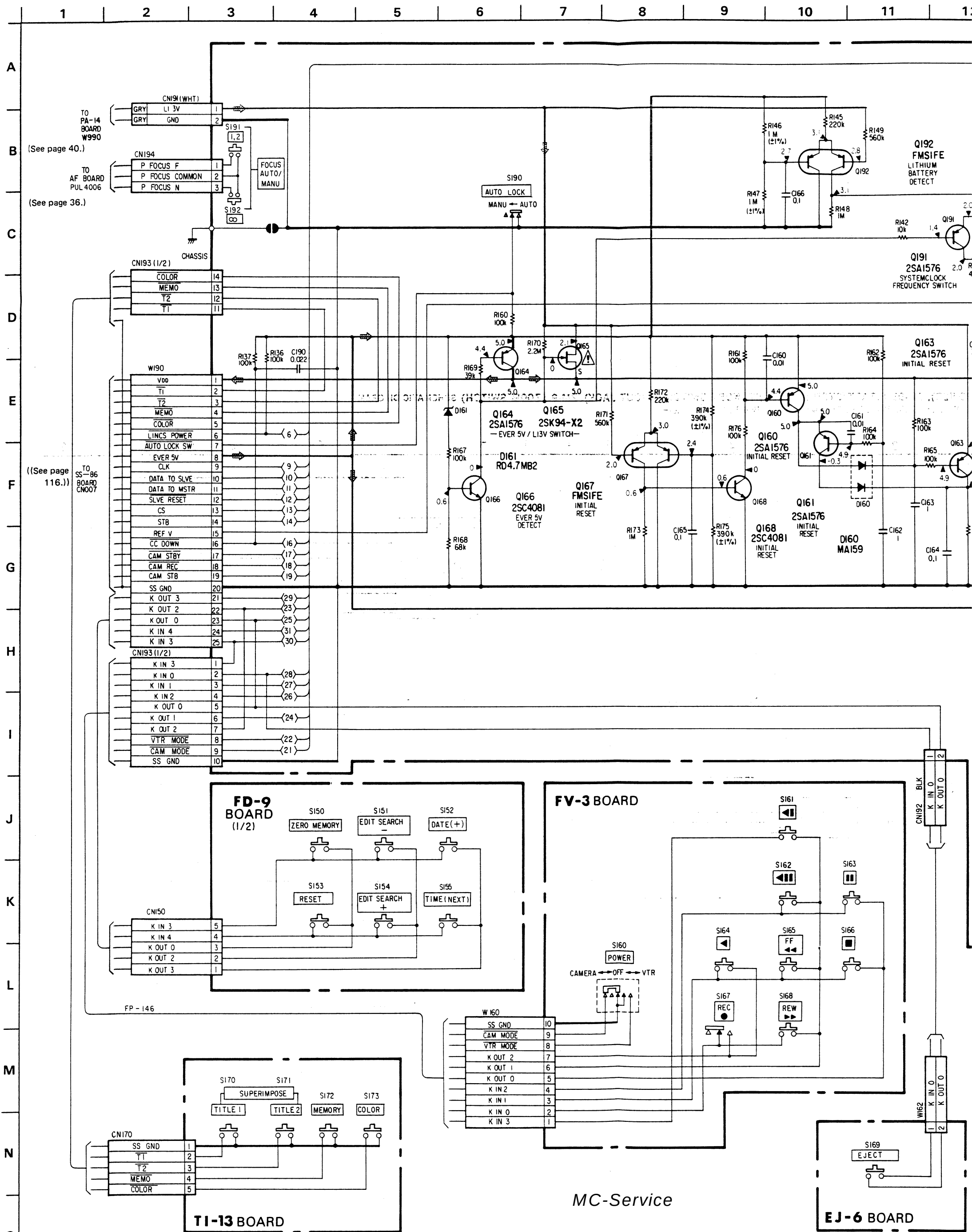




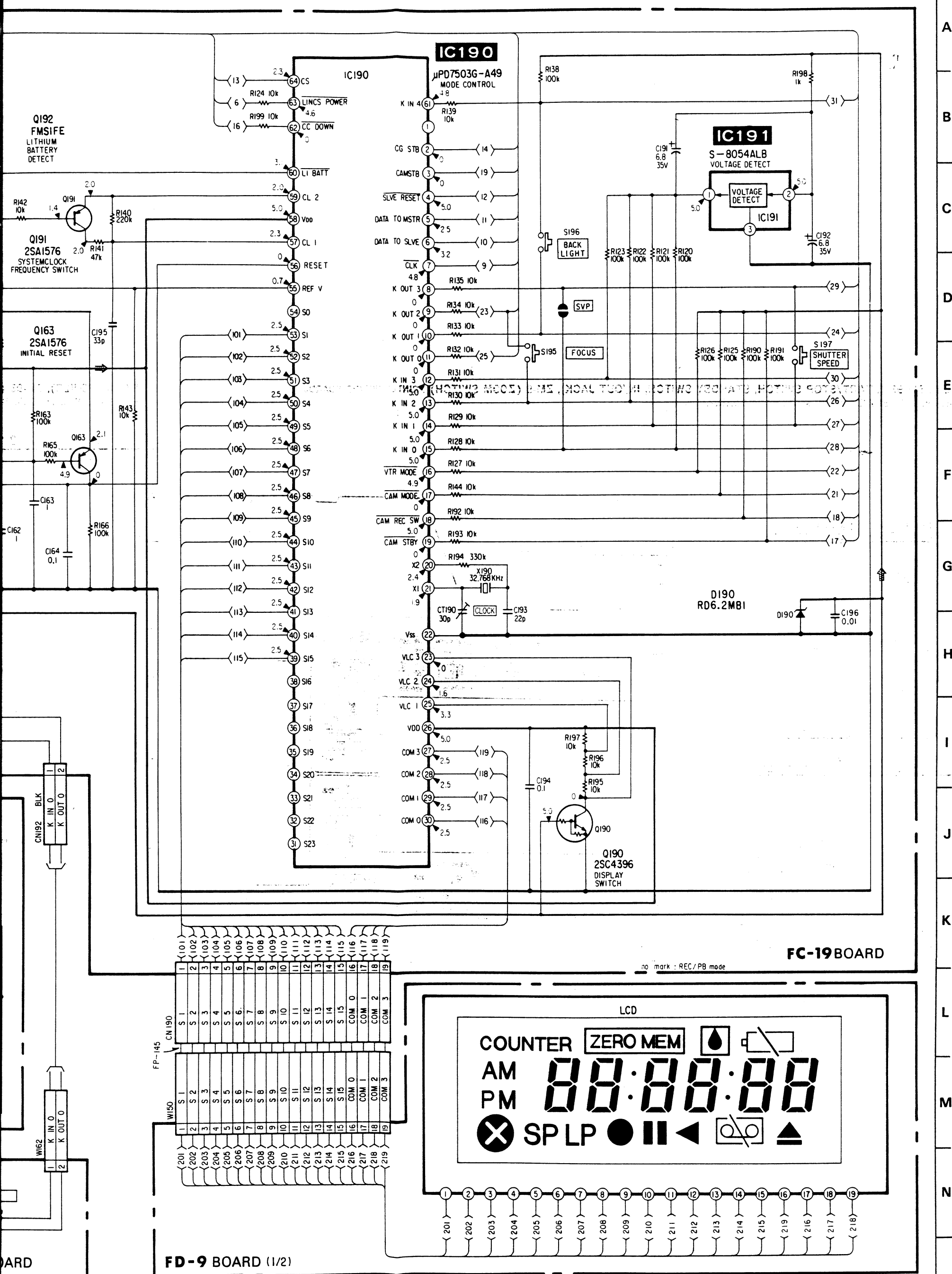
PA-14 (POWER), SW-93 (START/STOP SWITCH, STANDBY SWITCH, IN/OUT JACK), ZM-9 (ZOOM SWITCH) SCHEMATIC DIAGRAM
 —Ref. No. SW-93 and ZM-9 BOARDS: 5,000 series, PA-14 BOARD: 6,000 series—



MC-Service

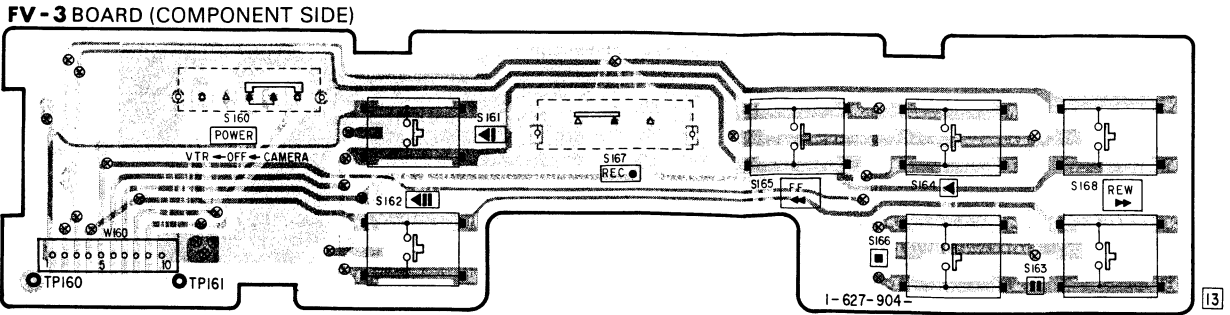
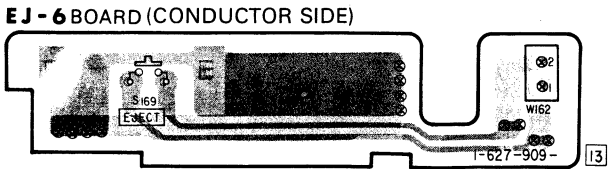
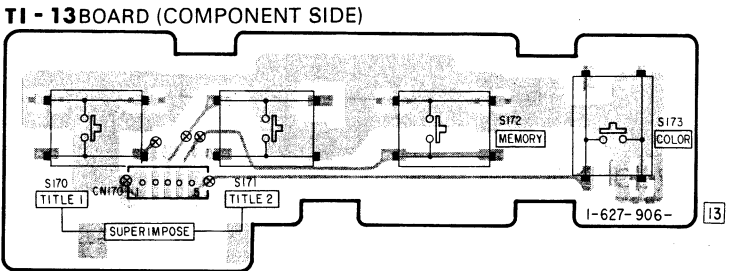
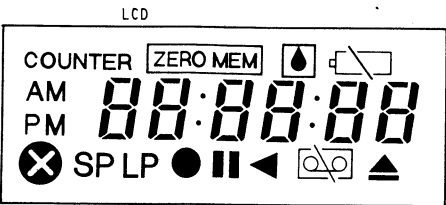
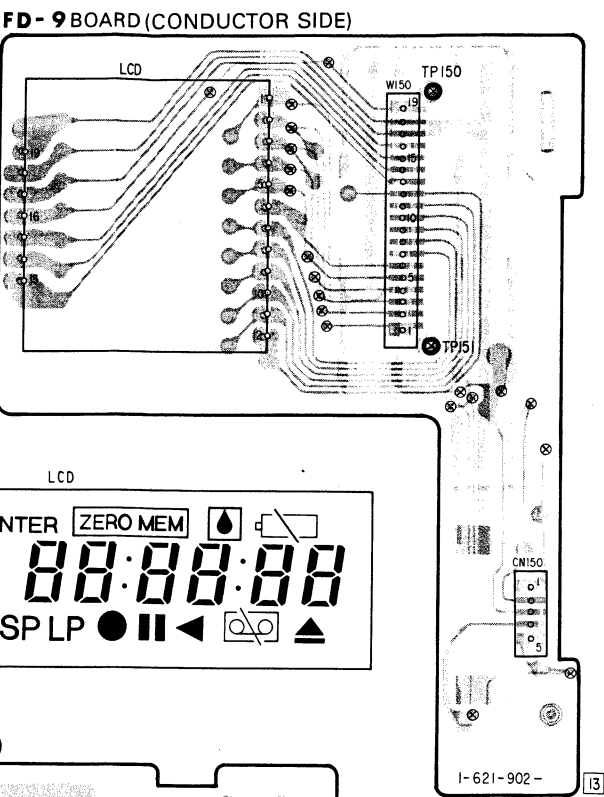
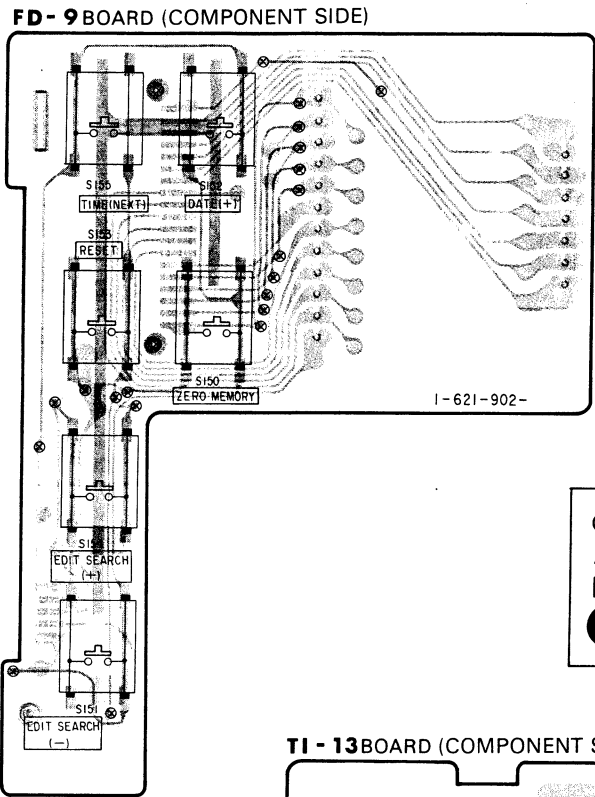
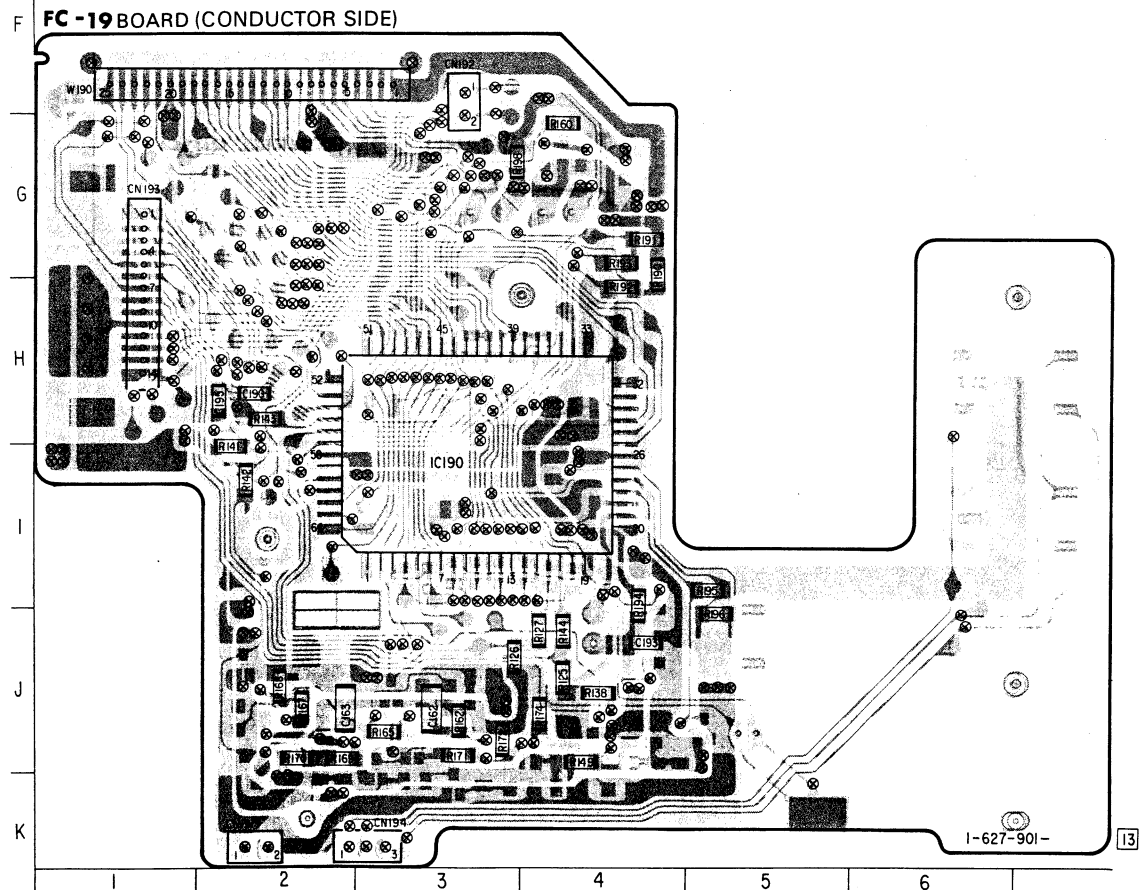
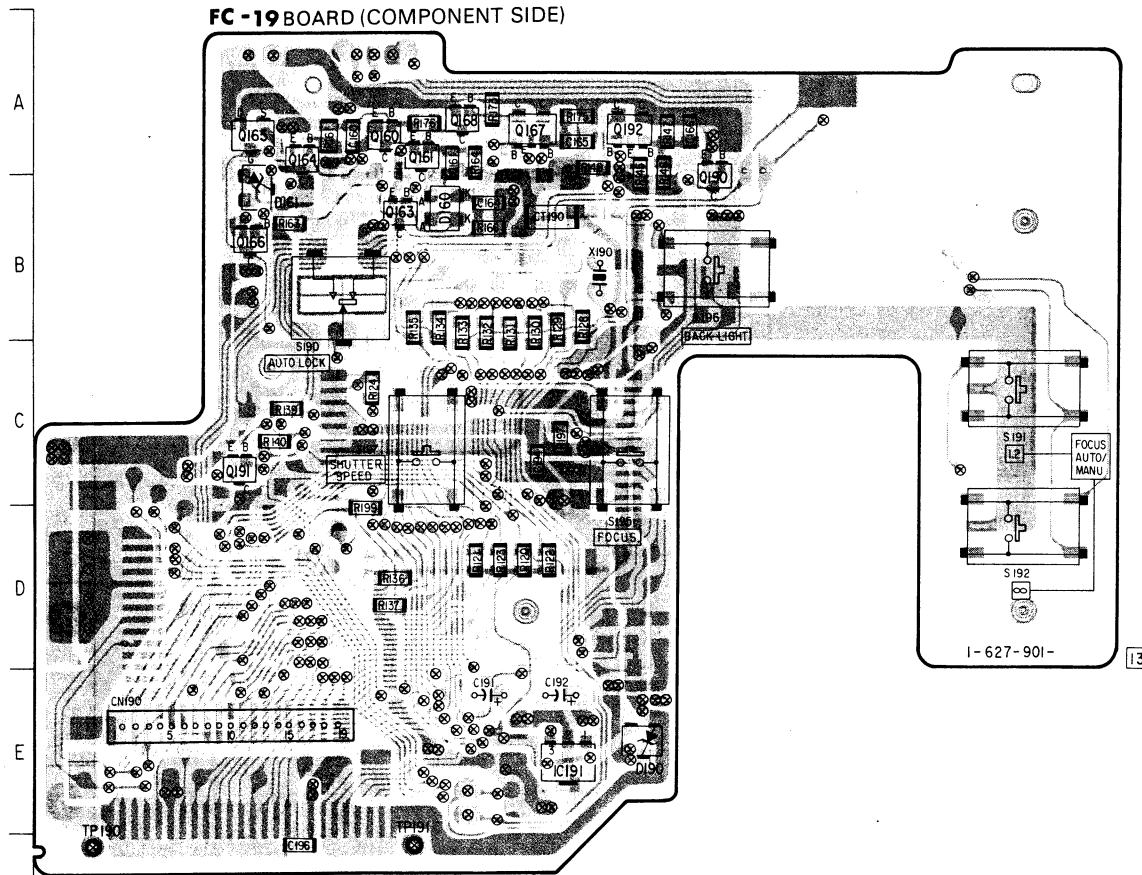


1 12 13 14 15 16 17 18 19 20 21



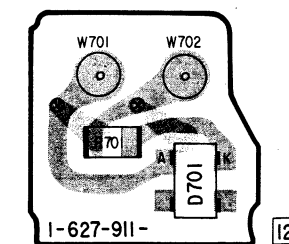
FC-19 (MODE CONTROL), FV-3 (POWER SWITCH, VTR FUNCTION SWITCH), FD-9 (CAMERA FUNCTION SWITCH), EJ-6 (EJECT SWITCH), TI-13 (DIGITAL TITLER SWITCH) PRINTED WIRING BOARDS
—Ref. No. FC-19, FV-3, FD-9, EJ-6 and TI-13 BOARDS: 4,000 series—

- CN190 E-1
- CN191 K-2
- CN192 F-3
- CN193 G-1
- CN194 K-3
- CT190 B-4
- D160 B-3
- D161 A-2
- D190 E-4
- IC190 H-3
- IC191 E-4
- Q160 A-3
- Q161 A-3
- Q163 B-3
- Q164 A-2
- Q165 A-2
- Q166 B-2
- Q167 A-4
- Q168 A-3
- Q190 A-5
- Q191 C-2
- Q192 A-4
- TP190 E-1
- TP191 E-3
- W190 F-1

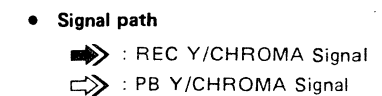
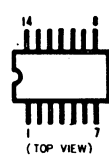
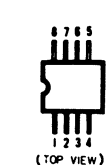


MC-Service

—Ref. No. VF-20, TL-21 and TL-24 BOARDS : 5,000 series—



—Ref. No. VF-20, TL-21 and TL-24 BOARDS: 5,000 series—

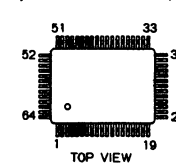
**AN2512S****LA7293M**

(TOP VIEW)

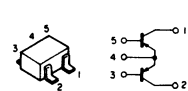
S-8054ALB-LM-S



μPD7503G-A49



TOP VIEW

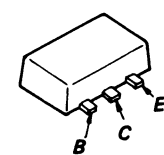
FMS1FE

2SA1163
2SA1576
2SC4081-R
2SC4396
2SD1819A-Q



↓
B

2SD1615

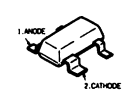


2SK94-X2

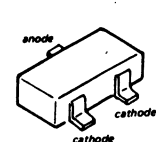


S

GL-1HD51

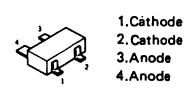


MA152WA



cathode

MA159



- 1.Cathode
- 2.Cathode
- 3.Anode
- 4.Anode

RD10M-B2
RD12M-B1
RD4.7M-B2
RD6.2M-B1



2 2 1

MC-Service

SECTION 5 EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

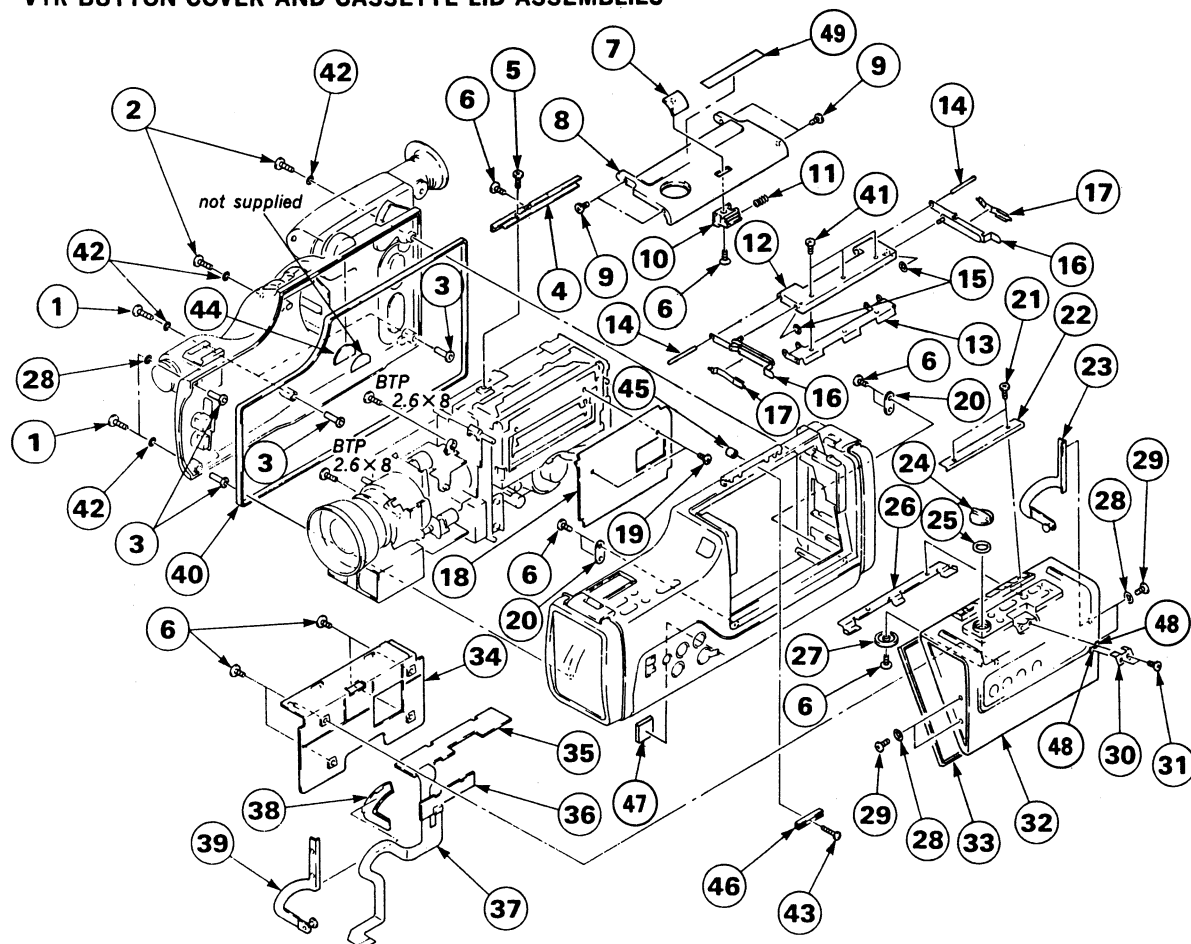
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
Example:
(RED) ... KNOB, BALANCE (WHITE)
↑ Cabinet's Color ↑ Parts' Color

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

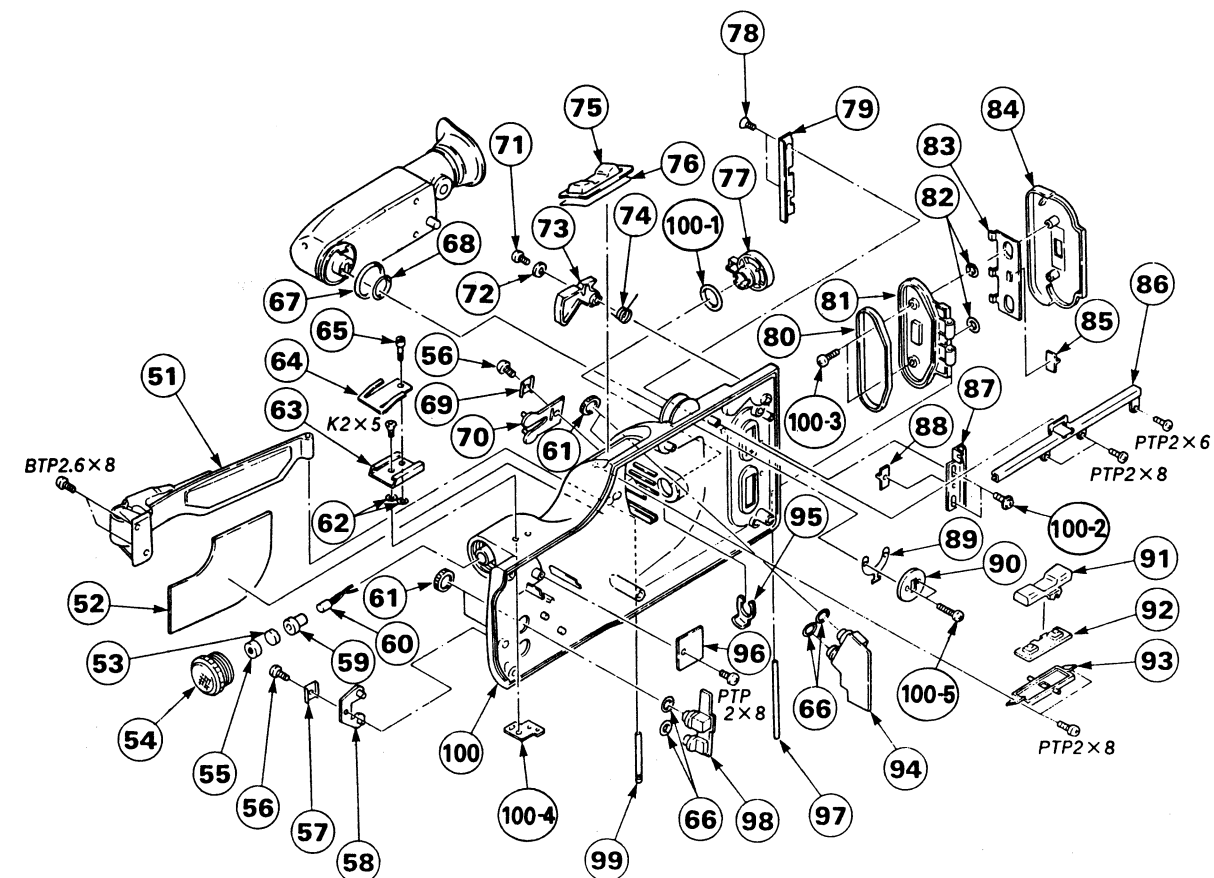
- CND: Canadian model

5-1. VTR BUTTON COVER AND CASSETTE LID ASSEMBLIES



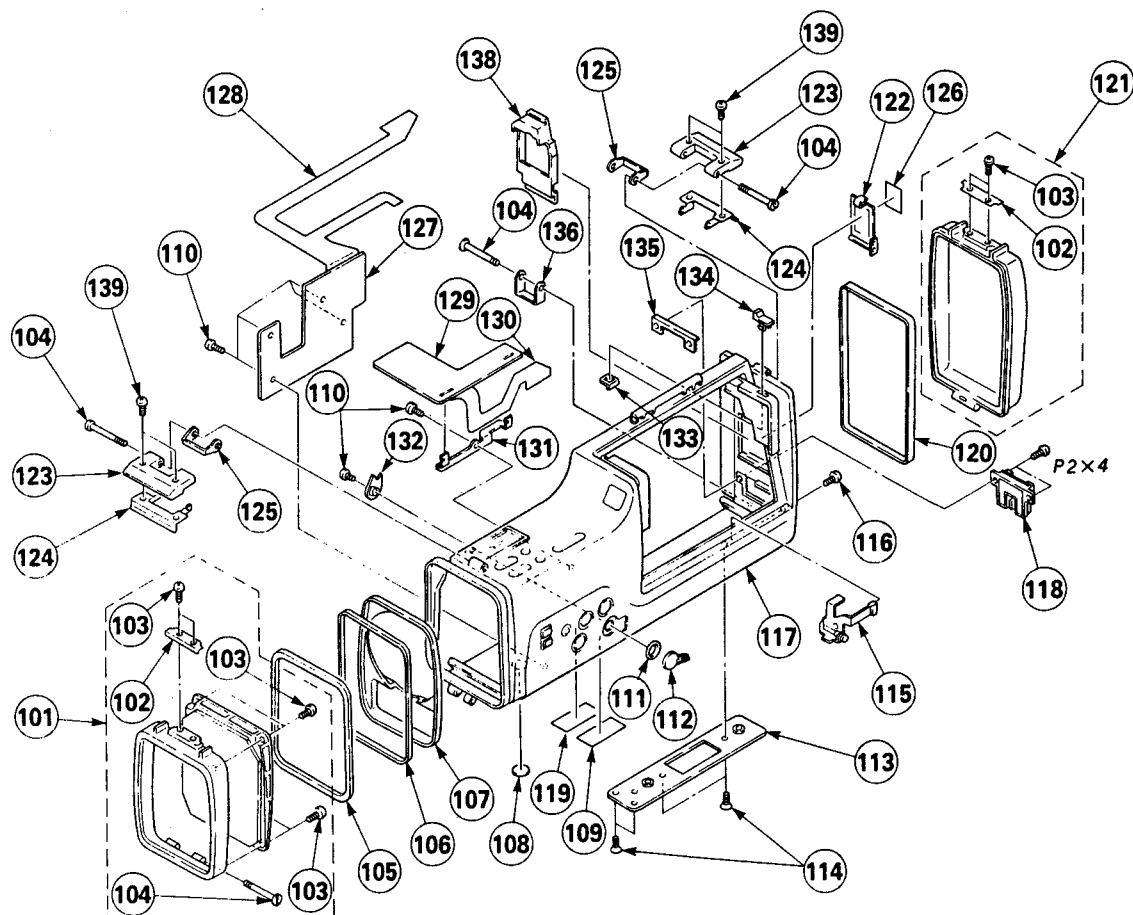
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	3-728-644-01	SCREW, CABINET		27	3-726-573-01	HOLDER, POWER KNOB	
2	3-728-662-01	SCREW (2.6X10), TAPPING		28	2-115-882-01	RING	
3	3-728-645-01	SLEEVE		29	3-728-660-01	SCREW (M2X4)	
4	3-730-835-01	REINFORCEMENT, CABINET (R)		30	3-728-521-01	PLATE, LOCK, BUTTON COVER	
5	3-719-381-01	SCREW (M2X4)		31	3-728-659-01	SCREW (2X5), TAPPING	
6	3-713-790-01	SCREW (M2X6), TAPPING, P3		32	X-3724-585-1	LID ASSY, CASSETTE	
7	3-726-567-01	KNOB, BUTTON COVER LOCK		33	X-3726-561-1	LID ASSY, CASSETTE (GRAY:CND)	
8	3-728-538-01	COVER, VTR BUTTON		34	3-728-604-01	PACKING, CASSETTE LID	
9	3-728-661-01	SCREW (M2X3)		35	3-728-558-01	LID (REAR), CASSETTE	
10	3-726-582-01	LEVER, LOCK, BUTTON COVER		36	*A-7070-721-A	FV-3 BOARD, COMPLETE	
11	3-564-951-00	SPRING, COMPRESSION		37	*A-7070-722-A	TI-13 BOARD, COMPLETE	
12	3-728-543-01	BUCKLE		38	1-627-900-11	FP-146 FLEXIBLE BOARD	
13	3-728-544-01	STOPPER, BUCKLE		39	3-726-575-01	COVER, BRACKET, CASSETTE LID	
14	3-728-545-01	SHAFT, BUCKLE		40	X-3724-586-1	BRACKET (F) ASSY, CASSETTE LID	
15	9-910-999-36	RING (E1.5) RETAINING		41	3-728-557-01	PACKING, CABINET	
16	X-3724-590-1	LEVER ASSY, SLIDE		42	2-115-893-01	SCREW (M1.7X2.5)	
17	3-728-546-01	SPRING		43	3-728-664-01	RING, O	
18	3-726-586-01	LID, CASSETTE COMPARTMENT		44	3-730-857-01	+P M2X14	
19	3-713-791-01	SCREW (M1.7X5), TAPPING, P2		45	3-730-844-01	REINFORCEMENT (B)	
20	3-728-599-01	RETAINER, SHAFT		46	3-730-845-01	SPACER, REINFORCEMENT	
21	2-115-897-21	SCREW (M2X10) (SUS)		47	3-730-843-01	REINFORCEMENT (A)	
22	3-728-519-01	RETAINER (A), BUCKLE		48	3-730-839-01	SPACER, MD	
23	X-3724-587-1	BRACKET (R) ASSY, CASSETTE LID		49	3-730-840-01	SPACER, LOCK PLATE	
24	3-726-572-01	KNOB, POWER			*3-730-859-01	LABEL, WATER CAUTION	
25	3-728-663-01	RING (P 7), O					
26	3-728-520-01	RETAINER (B), BUCKLE					

5-2. CABINET (LEFT) ASSEMBLY



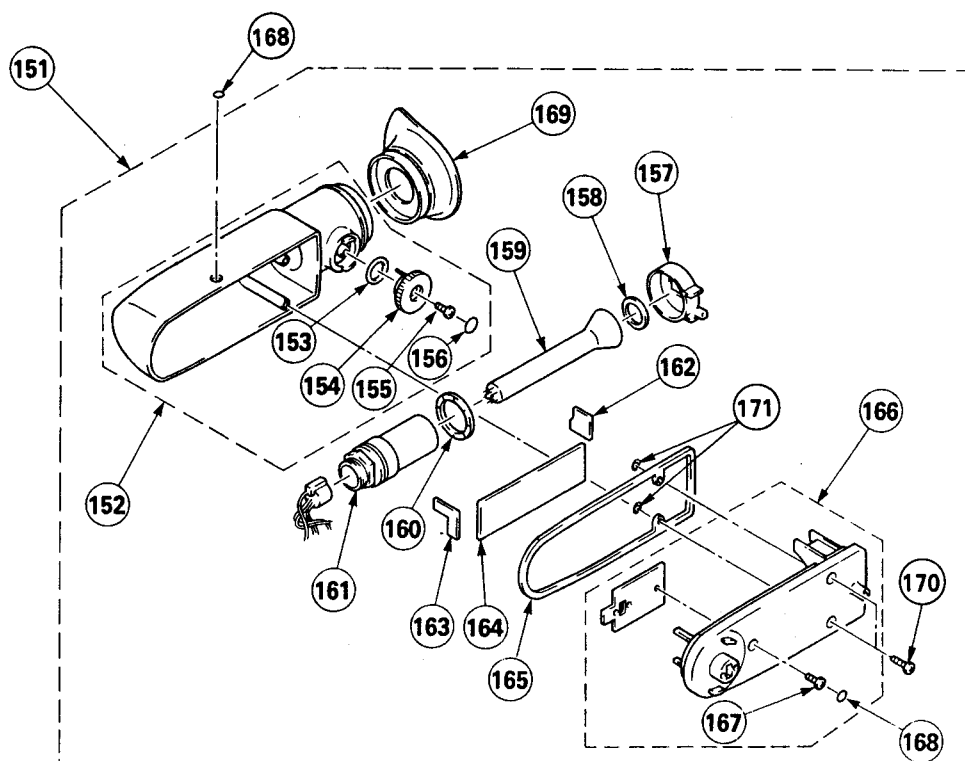
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	3-728-579-01	BELT, GRIP		79	3-728-568-01	PLATE (UPPER), LOCK, JACK LID	
52	*3-728-563-01	RUBBER, GRIP		80	3-728-569-01	PACKING, JACK LID	
53	3-730-850-01	SHEET, WATERPROOF		81	3-726-594-01	LID (LOWER), JACK	
54	X-3724-594-1	NET ASSY, MICROPHONE			3-726-594-21	LID (LOWER), JACK (GRAY:CND)	
55	2-115-879-01	RING, RETAINER		82	3-669-946-00	RING (P4), O	
56	3-728-659-01	SCREW (2X5), TAPPING		83	3-728-577-01	PLATE (LOWER), LOCK, JACK LID	
57	3-728-576-01	RETAINER, MIC JACK LID		84	3-728-567-01	LID (UPPER), JACK	
58	3-728-575-01	LID, MIC JACK			3-728-567-21	LID (UPPER), JACK (GRAY:CND)	
59	3-728-593-01	HOLDER, MICROPHONE		85	3-726-577-01	KNOB, LOCK, JACK LID	
60	A-7090-863-A	MIC ASSY (C-1007D)			3-726-577-21	KNOB, LOCK, JACK LID (GRAY:CND)	
61	3-728-674-01	NUT, ROUND, KNURL		86	3-728-580-01	REINFORCEMENT, CABINET (L)	
62	2-115-882-01	RING		87	3-728-571-01	PLATE, SWITCH, EDIT	
63	3-688-985-01	SHOE, ACCESSORY		88	3-728-570-01	KNOB, EDIT	
64	3-688-940-11	SPRING, LEAF		89	3-728-671-01	SPRING	
65	2-120-002-01	SCREW, ACC LINING STOPPER		90	3-728-670-01	BRACKET, EVF	
66	3-336-115-01	RING, O		91	3-726-591-01	KEY, ZOOM	
67	3-728-597-01	BUSHING, EVF		92	*1-627-910-11	ZM-9 BOARD	
68	3-728-672-01	RING (P12), O		93	3-726-590-01	BASE, ZOOM BUTTON	
69	3-728-574-01	RETAINER, LINES JACK LID		94	*1-627-903-14	SW-93 BOARD	
70	3-728-581-01	LID, LINES JACK		95	3-726-579-01	PLATE, LOCK, REC	
71	2-120-001-01	SCREW (2.6X8), TAPPING, (+) (K)		96	*A-7061-278-A	MC-29 BOARD, COMPLETE	
72	3-730-809-01	BRACKET, LOCK KNOB		97	3-728-583-01	SHAFT, JACK LID	
73	3-726-592-01	KNOB, LOCK, EVF		98	*1-627-908-11	MJ-19 BOARD	
	3-726-592-21	KNOB, LOCK, EVF (GRAY:CND)		99	3-728-578-01	SHAFT, GRIP BELT FITTING	
74	3-728-582-01	SPRING, TORSION		100	X-3724-591-1	CABINET (LEFT) ASSY	52, 75, 76
75	3-730-812-01	BUTTON, ZOOM			X-3726-563-1	CABINET (LEFT) ASSY (GRAY:CND)	52, 75, 76
76	3-730-811-01	SHEET, ADHESIVE, ZOOM BUTTON		100-1	4-870-946-00	RING (P11), O	
77	X-3724-593-1	SWITCH ASSY, REC		100-2	3-669-480-21	SCREW, +PTPHW2	
78	3-728-693-01	SCREW (2X5) (TYPE 2), TAPPING		100-3	3-713-790-01	SCREW (M2X6), TAPPING, P3	
				100-4	3-688-941-01	NUT, PLATE, SHOE	
				100-5	3-720-811-01	SCREW (M2X12)	

5-3. CABINET (RIGHT) ASSEMBLY



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	A-7080-564-A	CABINET BLOCK ASSY, FRONT	102-104	121	A-7080-565-A	COVER (S) BLOCK ASSY, BATTERY	102, 103
	A-7080-620-A	CABINET BLOCK ASSY, FRONT (GRAY:CND)	102-104	122	3-726-587-01	L10, BATTERY CASE	
102	3-728-508-01	RETAINER, BUCKLE (S)		123	X-3725-138-2	BUCKLE (S) ASSY	124, 139
103	3-728-659-01	SCREW (2X5), TAPPING			X-3725-169-2	BUCKLE (S) ASSY (GRAY:CND)	124, 139
104	3-728-559-01	SCREW, FRONT CABINET		124	3-728-547-01	STOPPER, BUCKLE (S)	
105	3-728-550-01	ORNAMENT, FRONT		125	3-728-548-01	BRACKET, BELT	
106	3-728-555-01	PACKING, FRONT		126	*3-704-256-01	LABEL, CAUTION (U MODEL)	
107	3-726-595-01	PLATE, LIGHT TRANSMISSION		127	*A-7061-289-A	FC-19 BOARD, COMPLETE	
108	3-728-602-01	PLATE, BLIND, ADJUSTMENT HOLE		128	1-627-885-11	FP-144 FLEXIBLE BOARD	
	3-728-602-21	PLATE, BLIND, ADJUSTMENT HOLE (GRAY:CND)		129	*A-7070-718-A	FD-9 BOARD, COMPLETE	
109	*3-728-695-01	LABEL, MODEL NUMBER (U/C MODEL)		130	1-627-886-11	FP-145 FLEXIBLE BOARD	
109	*3-730-882-01	LABEL, MODEL NUMBER (E MODEL)		131	*3-728-631-01	BRACKET, FD PC BOARD	
110	3-713-790-01	SCREW (M2X6), TAPPING, P3		132	3-726-568-01	HOLDER, AL KNOB	
111	3-728-663-01	RING (P 7), O		133	3-726-571-01	HOLDER, EJECT KNOB	
112	3-726-585-01	KNOB, AL		134	3-726-570-01	KNOB, EJECT	
113	3-728-551-01	SCREW, TRIPOD		135	3-728-552-01	BRACKET, TERMINAL	
114	2-120-001-01	SCREW (2.6X8), TAPPING, (+) (K)		136	3-728-665-01	BRACKET (LOWER), BELT	
115	X-3725-146-1	KNOB ASSY, B LOCK		138	3-728-666-01	COVER, LI	
116	3-728-661-01	SCREW (M2X3)		139	2-115-893-01	SCREW (M1.7X2.5)	
117	X-3724-588-1	CABINET (RIGHT) ASSY	122, 138				
	X-3725-179-2	CABINET (RIGHT) ASSY (GRAY:CND)	122, 138				
118	1-535-658-11	TERMINAL BOARD					
119	*3-704-367-01	LABEL (US MODEL)					
120	3-728-556-01	PACKING, BATTERY COVER					

5-4. EVF BLOCK ASSEMBLY

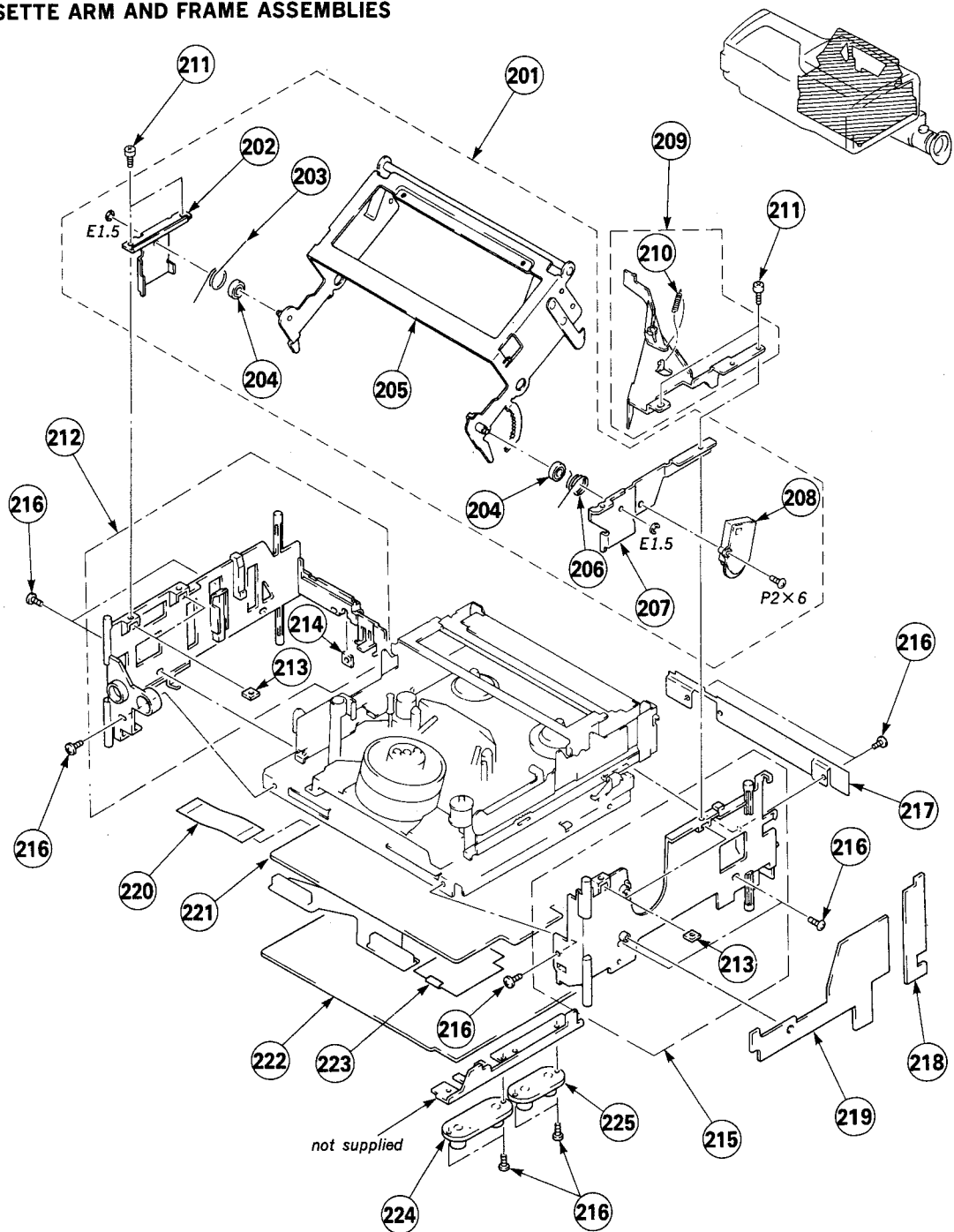


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	A-7019-110-A	EVF BLOCK ASSY (U/C MODEL)	152-171	160	3-724-549-01	LOCK, CRT	
	A-7019-175-A	EVF BLOCK ASSY (GRAY:CND)	152-171	161	*1-451-310-21	DEFLECTION YOKE (B/W) (L951)	
	A-7019-135-A	EVF BLOCK ASSY (E MODEL)	152-171	162	*1-627-911-12	TL-21 BOARD	
152	X-3725-116-1	CABINET(LEFT) ASSY, EVF(U/C MODEL)	153-156	163	*1-627-912-12	TL-24 BOARD	
	X-3726-562-1	CABINET (LEFT) ASSY, EVF (GRAY:CND)	153-156	164	*A-7061-291-A	VF-20 BOARD, COMPLETE	
	X-3724-597-1	CABINET(LEFT) ASSY, EVF(E MODEL)	153-156	165	3-728-596-01	PACKING, EVF	
153	3-730-814-01	RING, O		166	X-3725-122-1	CABINET (RIGHT) ASSY, EVF	167, 168
154	3-726-581-01	KNOB, ADJUSTMENT			X-3725-162-1	CABINET (RIGHT) ASSY, EVF (GRAY:CND)	167, 168
155	3-713-790-01	SCREW (M2×6), TAPPING, P3		167	3-728-661-01	SCREW (M2×3)	
156	3-730-813-01	PLATE, BLIND, ADJUSTMENT KNOB		168	3-728-669-01	PLATE, BLIND, FOCUS	
157	X-3724 596-1	HOLDER ASSY, CRT			3-728-669-21	PLATE, BLIND, FOCUS (GRAY:CND)	
158	3-724-570-01	RING, CRT FIXED		169	X-3725-121-1	EYE CUP	
159	△ 1-546-065-11	CATHODE-RAY TUBE, B/W (MOIJVV47WB) (V901)		170	3-728-668-01	SCREW (2×8) (TYPE2), TAPPING	
				171	3-730-840-01	SPACER, LOCK PLATE	

Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

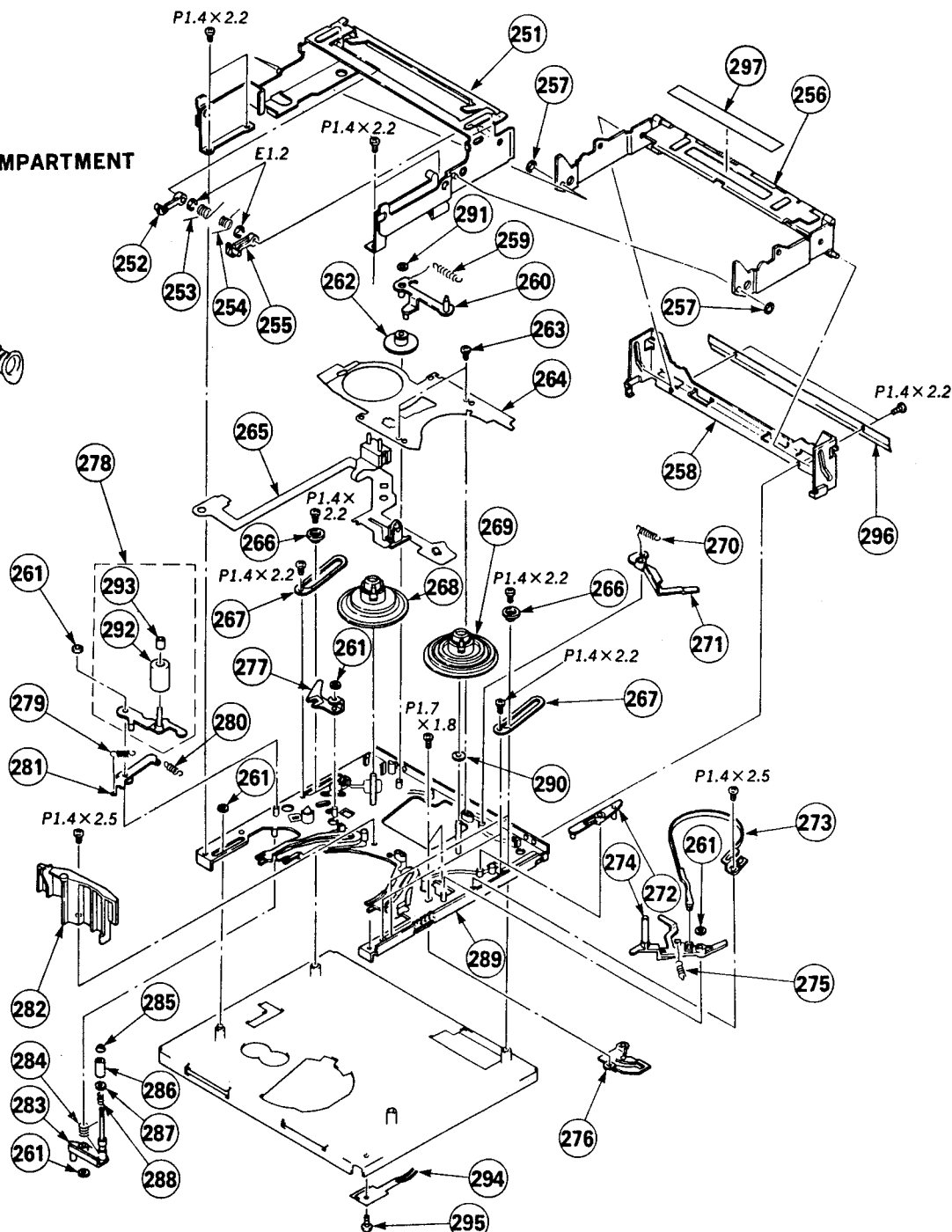
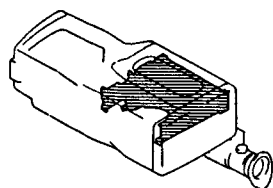
Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-5. CASSETTE ARM AND FRAME ASSEMBLIES



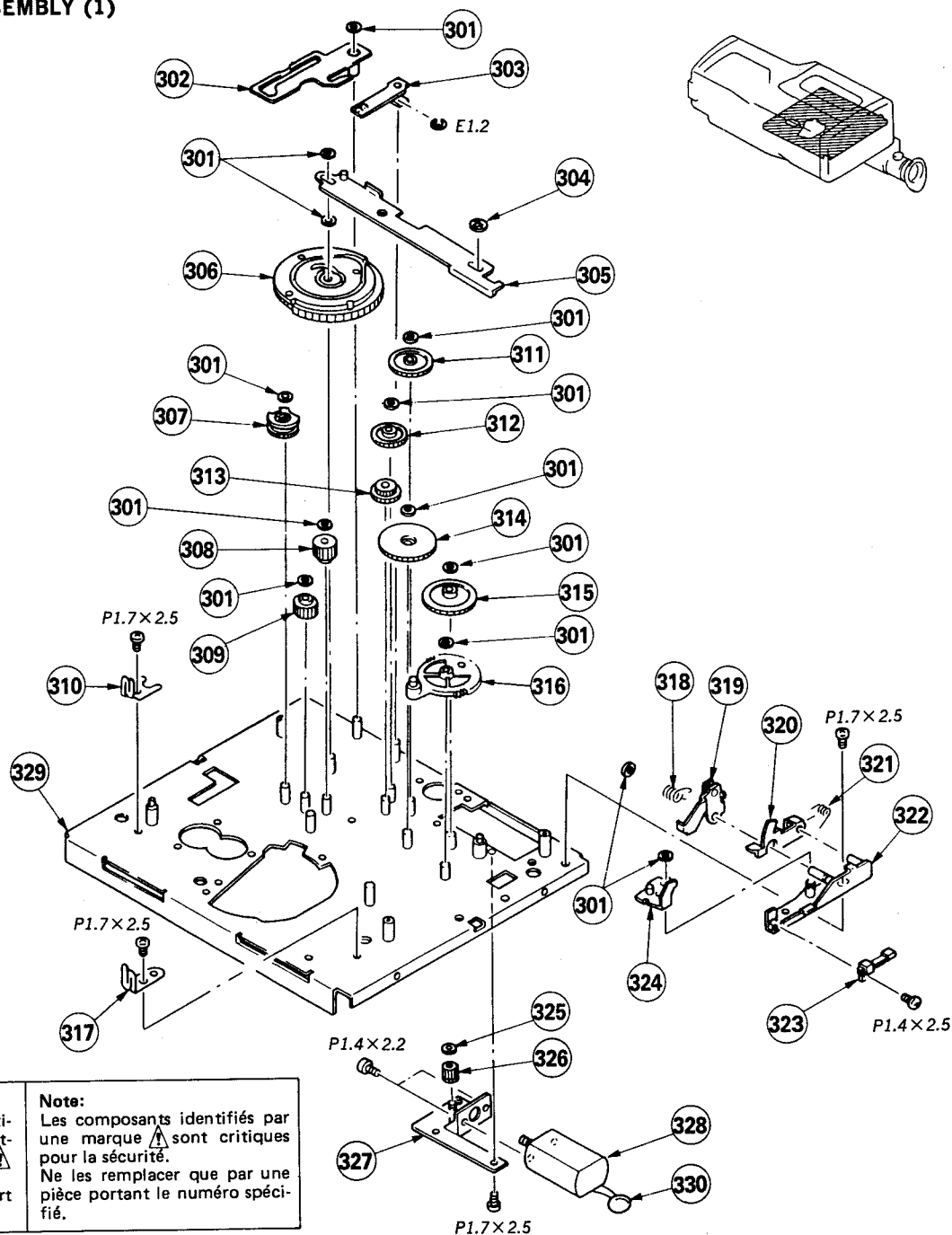
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	A-7040-141-A	ARM BLOCK ASSY (3), CASSETTE	202-208	214	3-718-233-01	NUT, PLATE	213
202	*3-719-606-01	PLATE (T2) (M), SIDE		215	*X-3724-504-1	FRAME (R) ASSY, MD	
203	3-695-582-01	SPRING, TORSION		216	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
204	3-695-512-02	COLLAR, CASSETTE ARM		217	*3-728-689-01	PLATE (B), BLIND, MD	
205	X-3712-034-4	ARM ASSY (2), CASSETTE		218	*1-627-909-11	EJ-6 BOARD	
206	3-695-581-01	SPRING, TORSION		219	*1-627-905-11	PA-14 BOARD	
207	3-695-641-01	PLATE (S2), SIDE		220	1-574-083-11	CABLE, FLAT (1.0MM PITCH) 15P	
208	3-681-528-11	DAMPER		221	*A-7061-282-A	SS-86 BOARD, COMPLETE	
209	A-7040-140-B	GUARD BLOCK ASSY, TAPE	210	222	*A-7061-165-A	VA-40 BOARD, COMPLETE	
210	3-695-718-01	SPRING, TENSION		223	*3-726-558-01	PLATE, SHIELD, VA-SS	
211	3-719-697-01	SCREW (M1.7X5), SPECIAL HEAD		224	1-537-142-11	TERMINAL BOARD (AV OUT) (J361)	
212	*X-3724-503-1	FRAME (F) ASSY, MD	213, 214	225	1-565-298-11	JACK, PIN 2P (AV IN) (J360)	
213	3-716-418-01	NUT, FRAME PLATE					

5-6. CASSETTE COMPARTMENT ASSEMBLY



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	X-3695-447-6	COMPARTMENT ASSY, CASSETTE, LS		275	3-695-591-01	SPRING, TENSION	
252	3-695-595-01	RETAINER (T), CASSETTE		276	3-695-733-01	PLATE, CAM, LS	
253	3-695-605-01	SPRING, TORSION		277	X-3712-022-1	ARM (B) ASSY (2), PINCH	
254	3-695-604-01	SPRING, TORSION		278	X-3712-032-2	ARM (C) ASSY (2), PINCH	292, 293
255	3-695-594-01	RETAINER (S), CASSETTE		279	3-695-622-01	SPRING, TENSION	
256	X-3695-448-3	ARM ASSY, BLIND		280	3-695-719-01	SPRING, TENSION	
257	3-669-465-00	WASHER (1.5), STOPPER		281	X-3695-415-1	PINCH LEVER ASSY	
258	3-695-646-01	ARM, LS		282	3-695-624-01	BASE, PROTECT	
259	3-695-718-01	SPRING, TENSION		283	X-3712-027-1	ARM ASSY (2), TG7	
260	X-3712-037-1	LEVER (A) ASSY (2)		284	3-695-541-01	SPRING	
261	3-315-384-31	WASHER, STOPPER		285	3-712-158-01	FLANGE, UPPER, TG7	
262	X-3712-025-1	GEAR ASSY, TS		286	3-712-160-01	SLEEVE (2), TG7	
263	3-699-402-01	SCREW (M1.3X5.5), TAPPING		287	3-712-159-01	FLANGE, LOWER, TG7	
264	3-712-165-01	PLATE (2), STOPPER		288	3-712-157-01	SPRING, COMPRESSION	
265	A-7060-693-A	FP-53 BOARD, COMPLETE		289	X-3713-962-1	CHASSIS ASSY (2), LS	
266	3-695-698-01	GUIDE, LS		290	3-701-444-01	WASHER, 6	
267	3-695-697-01	SPRING, LEAF, LS		291	3-321-393-01	WASHER, STOPPER	
268	X-3695-436-1	TABLE ASSY, REEL, TAKE-UP		292	X-3695-416-1	PINCH ROLLER ASSY	
269	X-3712-038-1	TABLE ASSY (2), REEL, SUPPLY	290	293	3-695-569-01	SLEEVE (P), PINCH INNER	
270	3-542-475-00	SPRING, TENSION		294	*3-725-151-01	PLATE, GROUND, RP	
271	3-712-151-01	BRAKE (2), SOFT		295	3-719-695-21	SCREW (M1.7X2.5), SPECIAL HEAD	
272	3-695-735-04	ARM, TG1 RELEASE		296	*3-728-688-01	PLATE (A), BLIND, MD	
273	X-3695-432-1	BAND ASSY, TG1		297	*3-697-539-01	LABEL, CAUTION	
274	X-3712-019-1	ARM ASSY (2), TG1					

5-7. CHASSIS ASSEMBLY (1)

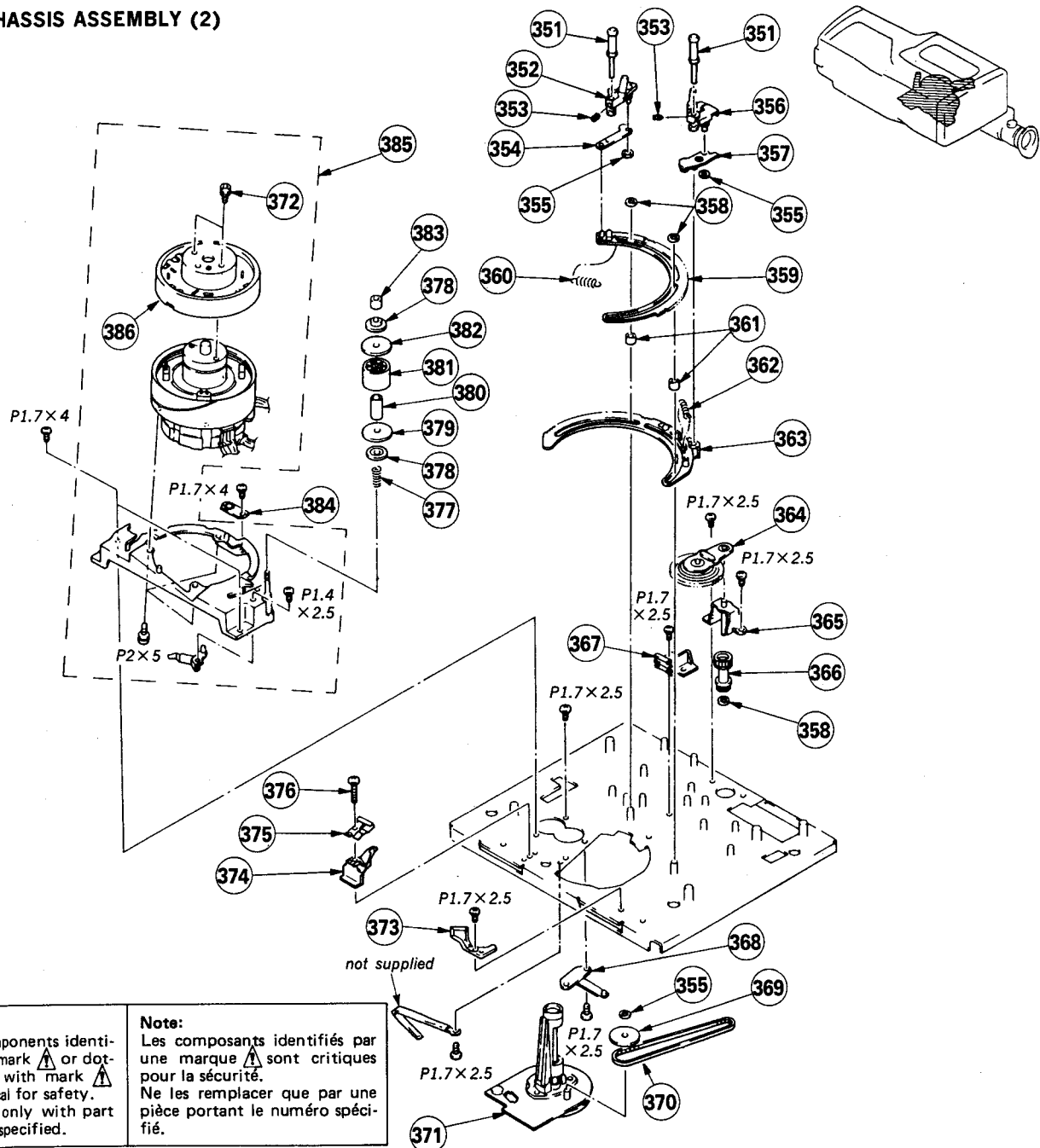


Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	3-315-384-31	WASHER, STOPPER		316	X-3695-417-1	GEAR (C) ASSY, LS	
302	X-3712-023-1	ARM (A) ASSY (2), PINCH		317	3-695-705-01	SPRING (S)	
303	3-695-589-01	LEVER (B), REEL LOCK		318	3-713-937-01	SPRING (A) (2)	
304	3-669-465-00	WASHER (1.5), STOPPER		319	X-3695-418-1	ARM ASSY, LOCK	
305	X-3695-439-4	SLIDER ASSY, M		320	3-695-574-01	ARM, RETURN PREVENTION	
306	X-3712-031-1	CAM ASSY (2)		321	3-695-579-01	SPRING (B), TORSION	
307	3-712-156-01	GEAR (M) (2), THREADING		322	X-3712-018-1	BASE ASSY (2), LOCK	
308	3-695-537-01	GEAR (T), THREADING		323	1-553-226-00	SWITCH, LEAF (CASSETTE DOWN) (S902)	
309	3-695-536-01	GEAR (S), THREADING		324	X-3695-438-1	ARM ASSY, EJECT	
310	3-695-706-01	SPRING (T)		325	3-321-393-01	WASHER, STOPPER	
311	3-695-559-01	GEAR (B), THREADING		326	3-712-150-01	WHEEL, WORM	
312	3-695-724-01	GEAR (D), THREADING		327	X-3712-017-1	HOLDER ASSY, MOTOR	
313	3-712-162-02	GEAR (C) (2), THREADING		328	1-541-508-11	MOTOR, DC (LA14-323F) (LOADIG) (M903)	
314	3-695-714-01	GEAR (A), LS		329	X-3712-036-1	CHASSIS ASSY (2), MECHANICAL	
315	3-695-563-04	GEAR (B), LS		330	1-161-032-00	CAP, CERAMIC 0.01MF (C901)	

5-8. CHASSIS ASSEMBLY (2)



Note:

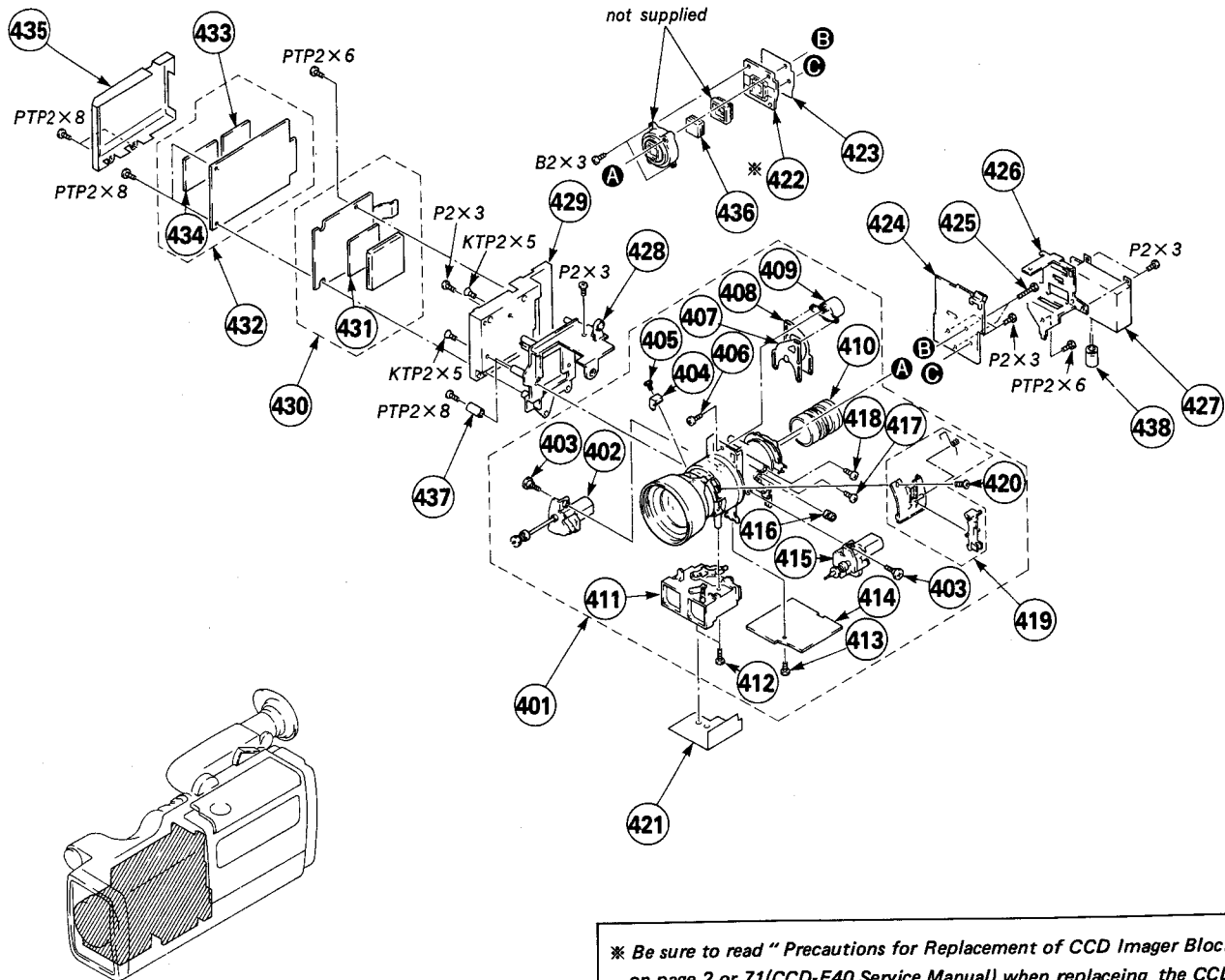
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
351	X-3712-029-1	ROLLER ASSY (2), GUIDE		369	X-3695-413-1	GEAR ASSY, CHANGE	
352	X-3712-030-1	BASE ASSY (2), TG5		370	3-695-637-01	BELT, RELAY	
353	3-695-770-01	SCREW, GR LOCK		371	8-835-309-01	MOTOR, DC BHF-3301C (CAPSTAN) (M902)	
354	3-695-545-01	JOINT, T		372	3-686-440-01	SCREW (2X5), BOLT WASHER	
355	3-321-393-01	WASHER, STOPPER		373	3-695-627-01	STOPPER, SLIDER, S	
356	X-3712-028-1	BASE ASSY (2), TG4		374	3-695-628-01	STOPPER, SLIDER, T	
357	X-3695-429-1	JOINT ASSY, S		375	3-695-677-01	SPRING (T), LEAF	
358	3-315-384-31	WASHER, STOPPER		376	3-695-519-01	SCREW, FITTING, LEAF SPRING(T)	
359	X-3695-414-1	SLIDER (T) ASSY, THREADING		377	3-695-532-01	SPRING, COMPRESSION	
360	3-695-773-01	SPRING, TENSION		378	3-695-727-01	RETAINER, FLANGE, UPPER	
361	3-695-544-01	ROLLER, GUIDE		379	3-695-794-01	FLANGE, LOWER, TG2	
362	3-695-772-01	SPRING, TENSION		380	3-695-530-01	SLEEVE, TG2	
363	X-3695-428-1	SLIDER (S) ASSY, THREADING		381	3-712-164-01	ROLLER (2), TG2	
364	X-3712-024-1	ARM ASSY (2), GEAR		382	3-695-528-01	FLANGE, TG2	
365	X-3712-020-1	BASE ASSY (2), MIDWAY PULLEY		383	3-695-529-01	NUT, TG2	
366	X-3712-021-1	PULLEY ASSY (2), MIDWAY		384	1-807-238-11	SENSOR, DEW CONDENSATION	
367	3-712-163-01	SUPPORT (2), SLIDER		385	Δ A-7048-173-A	DRUM ASSY (DGR-20B-R)	372, 386
368	1-535-574-11	TERMINAL, SHAFT GROUND		386	A-7049-130-A	DRUM ASSY, UPPER (DGR-20-R)	

5-9. CAMERA ASSEMBLY



* Be sure to read "Precautions for Replacement of CCD Imager Block" on page 2 or 71(CCD-F40 Service Manual), when replacing the CCD Imager.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
401	1-547-302-11	LENS, ZOOM (VCL-906XC)		420	3-707-522-01	SCREW, MICRO UNIT CLAMP	
402	3-707-448-01	MOTOR UNIT, AF (M905)		421	3-726-533-01	COVER, AF	
403	3-707-447-01	SCREW, MOTOR CLAMP		422*	A-7090-878-A	CCD ASSY (CCD IMAGER)	
404	3-707-446-01	STOPPER, (N)		423	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
405	3-707-445-01	SCREW, (N) STOPPER CLAMP		424	*A-7061-353-A	VC-38 BOARD, COMPLETE	
406	3-707-444-01	SCREW, IG METER CLAMP		425	3-335-640-51	SCREW (M2X16)	
407	3-707-457-01	(B) ASSY, IRIS FEATHER		426	3-725-182-01	JOINT	
408	3-707-458-01	FEATHER, IRIS (A)		427	1-464-993-11	CONVERTER, DC-DC	
409	3-707-442-01	METER, IG (IRIS) (M904)		428	*3-726-596-01	FRAME, CAMERA	
410	3-707-456-01	MIRROR TUBE UNIT, RELAY		429	*X-3724-550-1	CASE (A) ASSY, SHIELD, VC	
411	3-707-449-01	BLOCK UNIT, AF		430	*A-7061-329-A	VC-39 BOARD, COMPLETE	431
412	3-707-450-01	SCREW, AF BLOCK CLAMP		431	A-7068-127-A	DT-71 BOARD, COMPLETE (HIC)	
413	3-707-459-01	SCREW, AF PC BOARD CLAMP		432	*A-7061-163-A	VC-40 BOARD, COMPLETE	433, 434
414	3-707-521-01	PC BOARD UNIT, AF		433	A-7068-129-A	PR-20 BOARD, COMPLETE (HIC)	
415	3-707-452-01	MOTOR UNIT, ZOOM (M906)		434	A-7068-128-A	MX-7 BOARD, COMPLETE (HIC)	
416	3-707-453-01	ROLLER, ECCENTRIC		435	*X-3724-551-1	CASE (B) ASSY, SHIELD, VC	
417	3-707-454-01	SCREW		436	A-7090-879-A	KIT, FILTER, OPTICAL	
418	3-707-455-01	SCREW, RELAY SET		437	3-728-690-01	SLEEVE, CF	
419	3-707-523-01	MICRO UNIT		438	1-124-472-11	CAP, ELECT 470MF	

MC-29

FC-19

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF: μ F, PF: μ F.

RESISTORS

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORS

In each case, U: μ , for example:
UA...: μ A..., UPA...: μ PA...,
UPC...: μ PC, UPD...: μ PD...

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
*A-7061-278-A MC-29 BOARD, COMPLETE (Ref No. 4000 Series)							

<u>CAPACITOR</u>							
C585	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V	C162	1-162-638-11	CERAMIC CHIP 1MF	16V
C586	1-124-225-00	ELECT 100MF	20% 6.3V	C163	1-162-638-11	CERAMIC CHIP 1MF	16V
C587	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C164	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C588	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V	C165	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C589	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C166	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C590	1-163-137-00	CERAMIC CHIP 680PF	10% 50V	C190	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C591	1-163-077-00	CERAMIC CHIP 0.1MF	50V	C191	1-124-246-61	ELECT 6.8MF	20% 35V
C592	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C192	1-124-246-61	ELECT 6.8MF	20% 35V
C593	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C193	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
C594	1-162-638-11	CERAMIC CHIP 1MF	16V	C194	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C595	1-163-081-00	CERAMIC CHIP 0.22MF	25V	C195	1-163-105-00	CERAMIC CHIP 33PF	5% 50V
C596	1-124-225-00	ELECT 100MF	20% 6.3V	C196	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C598	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V	<u>CONNECTOR</u>			
C599	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V	CN190	1-566-535-11	CONNECTOR, FPC (ZIF) 19P	
C600	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V	CN191	*1-564-001-11	PIN, CONNECTOR 2P	
C601	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	CN192	*1-564-001-11	PIN, CONNECTOR 2P	
<u>CONNECTOR</u>				CN193	1-566-530-11	CONNECTOR, FPC (ZIF) 14P	
CN585	*1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P		CN194	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
<u>DIODE</u>				<u>TRIMMER</u>			
D585	8-719-105-32	DIODE RD2.7M-T1B1		CT190	1-141-331-11	CAP, VAR, TRIMMER (CHIP)	
<u>IC</u>				<u>DIODE</u>			
IC585	8-759-820-51	IC LA7293M		D160	8-719-404-12	DIODE MA159	
<u>TRANSISTOR</u>				D161	8-719-105-73	DIODE RD4.7M-B2	
Q585	8-729-905-35	TRANSISTOR 2SC4081R		D190	8-719-105-99	DIODE RD6.2M-B1	
<u>RESISTOR</u>				<u>IC</u>			
R585	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W		IC190	8-759-142-88	IC UPD7503G-A80-12	
R586	1-216-081-00	METAL GLAZE 22K 5% 1/10W		IC191	8-759-937-56	IC S-8054ALB-LM-S	
R587	1-216-097-00	METAL GLAZE 100K 5% 1/10W		<u>TRANSISTOR</u>			
R588	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W		Q160	8-729-905-23	TRANSISTOR 2SA1576R	
R589	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W		Q161	8-729-905-23	TRANSISTOR 2SA1576R	
R590	1-216-025-00	METAL GLAZE 100 5% 1/10W		Q163	8-729-905-23	TRANSISTOR 2SA1576R	
R591	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W		Q164	8-729-905-23	TRANSISTOR 2SA1576R	
R592	1-216-095-00	METAL GLAZE 82K 5% 1/10W		Q165	Δ 8-729-109-42	TRANSISTOR 2SK94-X2	
R593	1-216-295-00	METAL GLAZE 0 5% 1/10W		Q166	8-729-905-35	TRANSISTOR 2SC4081R	
*****				Q167	8-729-903-97	TRANSISTOR FMS1FE	
*A-7061-289-A FC-19 BOARD, COMPLETE (Ref No. 4000 Series)				Q168	8-729-905-35	TRANSISTOR 2SC4081R	
*****				Q190	8-729-810-19	TRANSISTOR 2SC4396	
<u>CAPACITOR</u>				Q191	8-729-905-23	TRANSISTOR 2SA1576R	
C160	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	Q192	8-729-903-97	TRANSISTOR FMS1FE	
C161	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	<u>RESISTOR</u>			
				R120	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
				R121	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
				R122	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
				R123	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
				R124	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
				R125	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R126	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R127	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R128	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R129	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R130	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R131	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R132	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R133	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R134	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R135	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R136	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R137	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R138	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R139	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R140	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R141	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R142	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R143	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R144	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R145	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R146	1-216-543-11	METAL GLAZE 1M 1% 1/10W	
R147	1-216-543-11	METAL GLAZE 1M 1% 1/10W	
R148	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R149	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R160	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R161	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R162	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R163	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R164	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R165	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R166	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R167	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R168	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R169	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R170	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W	
R171	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R172	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R173	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R174	1-216-530-00	METAL GLAZE 390K 1% 1/10W	
R175	1-218-167-11	METAL GLAZE 330K 1% 1/10W	
R176	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R190	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R191	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R192	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R193	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R194	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R195	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R196	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R197	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R198	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R199	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

Ref.No	Part No.	Description	Remark
<u>SWITCH</u>			
S190	1-570-870-21	SWITCH, SLIDE (AUTO LOCK)	
S191	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (1.2)	
S192	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (∞)	
S195	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (FOCUS)	
S196	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)(BACK LIGHT)	
S197	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (SHUTTER SPEED)	
<u>TERMINAL PIN</u>			
TP190	*1-535-622-11	PIN, TERMINAL	
TP191	*1-535-622-11	PIN, TERMINAL	
<u>CRYSTAL</u>			
X190	1-527-997-21	VIBRATOR, CRYSTAL (32.768KHz)	

*A-7061-291-A	VF-20 BOARD, COMPLETE	(Ref No. 5000 Series)	

3-713-535-01	CUSHION, CRT		
*3-725-155-01	INSULATOR, FB		
<u>CAPACITOR</u>			
C901	1-126-369-11	ELECT 220MF 20% 6.3V	
C902	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C904	1-127-486-00	ELECT(SOLID) 47MF 20% 6.3V	
C905	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C906	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	
C907	1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	
C908	1-163-015-00	CERAMIC CHIP 0.0033MF 10% 50V	
C909	1-126-193-11	ELECT 1MF 20% 50V	
C911	1-131-388-00	TANTALUM 68MF 10% 3.15V	
C912	1-102-038-00	CERAMIC 0.001MF 99% 500V	
C913	1-163-033-00	CERAMIC CHIP 0.022MF 50V	
C915	1-126-193-11	ELECT 1MF 20% 50V	
C916	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C917	1-135-166-21	TANTAL. CHIP 47MF 20% 6.3V	
C918	1-162-638-11	CERAMIC CHIP 1MF 16V	
C919	1-135-070-00	TANTAL. CHIP 0.1MF 10% 35V	
C920	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
<u>CONNECTOR</u>			
CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
<u>COMPOSITION CIRCUIT BLOCK</u>			
CP901	1-238-119-11	RES, ADJ	
<u>CRYSTAL</u>			
CRT901	1-526-978-21	SOCKET ASSY, CRT	

When indicating parts by reference number, please include the board name.

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Note:
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VF-20

TL-21

TL-24

FD-9

EJ-6

Ref.No	Part No.	Description	Remark
<u>DIODE</u>			
D903	8-719-400-20	DIODE MA152WA	
<u>IC</u>			
IC901	8-759-420-01	IC AN2512S	
<u>COIL</u>			
L901	1-408-421-00	INDUCTOR 100UH	
L902	1-410-379-21	INDUCTOR CHIP 6.8UH	
L903	1-459-858-11	COIL, FERRITE (HLC)	
<u>TRANSISTOR</u>			
Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q	
Q903	8-729-106-64	TRANSISTOR 2SD1615	
Q904	8-729-216-32	TRANSISTOR 2SA1163G	
<u>RESISTOR</u>			
R902	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R903	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R904	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R906	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R907	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R908	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R909	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R911	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R912	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R913	1-216-123-11	METAL GLAZE 1.2M 5% 1/10W	
R914	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R915	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R916	1-216-125-00	METAL GLAZE 1.5M 5% 1/10W	
R917	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R919	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R920	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R921	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R922	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R923	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R924	1-216-306-11	METAL GLAZE 3.9 5% 1/10W	
R925	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R926	1-218-163-11	METAL GLAZE 120K 1% 1/10W	
R928	1-216-870-11	METAL GLAZE 180K 1% 1/10W	
R929	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R930	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R931	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
<u>VARIABLE RESISTOR</u>			
RV901	1-230-203-00	RES, ADJ, METAL GLAZE 2.2M	
<u>TRANSFORMER</u>			
T901	1-439-428-11	TRANSFORMER ASSY, FLYBACK	

Ref.No	Part No.	Description	Remark
<u>THERMISTOR</u>			
TH901	1-807-938-11	THERMISTOR	

	*1-627-911-11	TL-21 BOARD (Ref No. 5000 Series)	

<u>DIODE</u>			
D701	8-719-941-34	DIODE GL1HD51	
<u>RESISTOR</u>			
R701	1-216-037-00	METAL GLAZE 330 5% 1/10W	

	*1-627-912-11	TL-24 BOARD (Ref No. 5000 Series)	

<u>DIODE</u>			
D710	8-719-941-34	DIODE GL1HD51	

	*A-7070-718-A	FD-9 BOARD, COMPLETE (Ref No. 4000 Series)	
	1-808-385-21	L.C.D	
<u>CONNECTOR</u>			
CN150	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
<u>SWITCH</u>			
S150	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S151	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S152	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	
S153	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	
S154	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S155	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	
<u>TERMINAL</u>			
TP150	*1-535-622-11	PIN, TERMINAL	
TP151	*1-535-622-11	PIN, TERMINAL	

	*1-627-909-11	EJ-6 BOARD (Ref No. 4000 Series)	

<u>SWITCH</u>			
S169	1-571-102-21	SWITCH, SLIDE (EJECT)	

When indicating parts by reference number, please include the board name.

Note:
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Note:
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FV-3**IT-13****SW-93****ZM-9****MJ-19****PA-14**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
	*A-7070-721-A	FV-3 BOARD, COMPLETE ***** (Ref No. 4000 Series)				<u>COIL</u>	
		<u>SWITCH</u>		L930	1-410-369-11	INDUCTOR CHIP 1UH	
S160	1-571-101-11	SWITCH, SLIDE (POWER)		L931	1-410-369-11	INDUCTOR CHIP 1UH	
S161	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (SLOW)		L932	1-410-369-11	INDUCTOR CHIP 1UH	
S162	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FRAME)		L933	1-410-369-11	INDUCTOR CHIP 1UH	
S163	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PAUSE)				<u>RESISTOR</u>	
S164	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PLAY)		R930	1-216-009-00	METAL GLAZE 22 5% 1/10W	
				R931	1-216-009-00	METAL GLAZE 22 5% 1/10W	
S165	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FF)				<u>SWITCH</u>	
S166	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (STOP)		S930	1-570-518-11	SWITCH, LEAF (STANDBY)	
S167	1-571-102-21	SWITCH, SLIDE (REC)		S931	1-570-689-11	SWITCH, KEY BOARD (REC, STRT/STOP)	
S168	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (REW)				*****	
		<u>TERMINAL</u>			*1-627-910-11	ZM-9 BOARD (Ref No. 5000 Series) *****	
TP160	*1-535-622-11	PIN, TERMINAL				<u>SWITCH</u>	
TP161	*1-535-622-11	PIN, TERMINAL		S970	1-571-315-11	SWITCH, KEY BOARD (WIDE)	
		*****		S971	1-571-315-11	SWITCH, KEY BOARD (TELE)	
	*A-7070-722-A	IT-13 BOARD, COMPLETE ***** (Ref No. 4000 Series)				*****	
		<u>CONNECTOR</u>			*1-627-908-11	MJ-19 BOARD (Ref No. 4000 Series) *****	
CN170	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P				<u>CAPACITOR</u>	
		<u>SWITCH</u>		C690	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
S170	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (TITLE 1)		C691	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
S171	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (TITLE 2)				<u>DIODE</u>	
S172	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (MEMO)		D690	8-719-106-56	DIODE RD10M-B2	
S173	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (COLOR)				<u>JACK</u>	
		*****		J690	1-563-367-21	JACK (EXT MIC)	
	*A-7070-723-A	SW-93 BOARD, COMPLETE ***** (Ref No. 5000 Series)		J691	1-565-756-21	JACK, SMALL (EXT MIC DC)	
		<u>CAPACITOR</u>				*****	
C930	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V			*1-627-905-11	PA-14 BOARD (Ref No. 6000 Series) *****	
C931	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V				<u>DIODE</u>	
C932	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V		D990	8-719-938-72	DIODE SB01-05CP	
C933	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V				<u>FUSE</u>	
		<u>CONNECTOR</u>		F990	1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A	
CN930	*1-566-189-11	PIN, CONNECTOR (PC BOARD) 10P		F991	1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A	
CN931	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P				<u>BATTERY HOLDER</u>	
		<u>DIODE</u>		J991	1-550-104-32	HOLDER, BATTERY	
D930	8-719-106-70	DIODE RD12M-B1					
D931	8-719-106-70	DIODE RD12M-B1					
		<u>JACK</u>					
J930	1-565-756-11	JACK, SMALL (REMOTE)					
J931	1-563-367-21	JACK (EARPHONE)					

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Note:
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Note:
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PA-14

Ref.No	Part No.	Description	Remark
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COIL

L990	1-412-026-11	INDUCTOR CHIP 1UH	
L991	1-412-026-11	INDUCTOR CHIP 1UH	
L992	1-412-026-11	INDUCTOR CHIP 1UH	

SWITCH

S990	1-570-870-21	SWITCH, SLIDE (EDID)	
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CONNECTOR

W991	1-559-927-41	CABLE, FLAT (1.0MM PITCH) 5P	
W992	1-535-658-11	TERMINAL BOARD	

MISCELLANEOUS

1-627-885-11	FP-144	FLEXIBLE BOARD	
1-627-886-11	FP-145	FLEXIBLE BOARD	
1-627-900-11	FP-146	FLEXIBLE BOARD	

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
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A-7002-319-A	HOLDER ASSY, TITLE (C MODEL)	
*A-7002-375-A	ADAPTOR BLOCK ASSY, BATTERY	
*A-7002-391-A	ADAPTOR BLOCK ASSY, BATTERY	
*A-7002-376-A	CASE BLOCK ASSY, CARRYING	
*A-7002-378-A	CASE BLOCK ASSY, CARRYING	
*X-3725-176-1	CASE (MAIN) ASSY, CARRYING	
*X-3725-177-1	CASE (MAIN) BLOCK ASSY, CARRYING	
1-574-039-11	CORD, CONNECTION	
*3-340-514-01	BAG, PROTECTION	
3-728-667-01	BELT, STRAP	
3-730-801-01	SHEET, INSTRUCTION, CASE ASSY	
3-730-802-01	BRACKET, UPPER LID	
3-730-802-11	BRACKET, UPPER LID	
3-730-803-02	BELT, SHOULDER	
3-730-804-01	COVER, CASSETTE	
3-730-804-11	COVER, CASSETTE	
3-730-805-01	CUSHION (LOWER) (BACK UP)	
3-730-806-01	LID, UPPER	
3-730-806-11	LID, UPPER	
3-730-807-01	CUSHION (NIGHT-SOIL), INNER	
3-730-851-01	RIVET, CHRISTMAS TREE	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION (E MODEL)	
3-786-139-21	MANUAL, INSTRUCTION (U/C MODEL)	
3-786-139-71	MANUAL, INSTRUCTION (E MODEL)	
*3-891-025-01	BAG, PROTECTION	

ACCESSORIES AND PACKING MATERIALS (KIT)

*1-571-163-11	SWITCH, ANTENNA CHANGE (CABLE)	
3-728-651-01	FRAME (A), PROTECTION	
3-728-652-01	FRAME (B), PROTECTION	
*3-728-654-01	CUSHION (UPPER)	
*3-728-655-01	CUSHION (INNER)	
*3-728-673-01	PAD, UPPER&LOWER	
*3-728-677-01	INDIVIDUAL CARTON (U/C MODEL)	
*3-728-677-51	INDIVIDUAL CARTON	
*3-728-677-31	INDIVIDUAL CARTON (E MODEL)	
** AC-V30	AC POWER ADAPTOR	
*** RFU-89	RF MODULATOR	
*** NP-55	RECHARGABLE BATTERY	

**MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
***MARK PARTS IS AVAILABLE AS A OPTIONAL ACCESORIES.

Part No.	Description	Remark
----------	-------------	--------

HARDWARE LIST

SCREW

7-621-255-15	SCREW +P 2X3	
7-621-255-45	SCREW +P 2X6	
7-621-281-15	SCREW +P 2X2	
7-621-772-00	SCREW +B 2X3	
7-627-452-37	SCREW, PRECISION +K 2X5 TYPE1	
7-627-850-17	SCREW, PRECISION +P 1.4X2.5	
7-627-552-07	SCREW, PRECISION +P 1.7X2.5	
7-627-852-18	SCREW, PRECISION +P 1.7X4 TYPE3	
7-627-852-38	SCREW, PRECISION +P 1.7X1.8 TYPE3	
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3	

7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
7-685-203-19	SCREW +KTP 2X5 TYPE2 NON-SLIT	
7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	

STOP RING

7-624-101-01	STOP RING 1.2 (E TYPE)	
7-624-102-04	STOP RING 1.5, TYPE -E	

TAPPING

7-685-105-19	TPG +P 2X8, TYPE 2, NON-SLIT	
--------------	------------------------------	--

When indicating parts by reference number, please include the board name.

CCD-SP5/SP7

SONY[®] SERVICE MANUAL

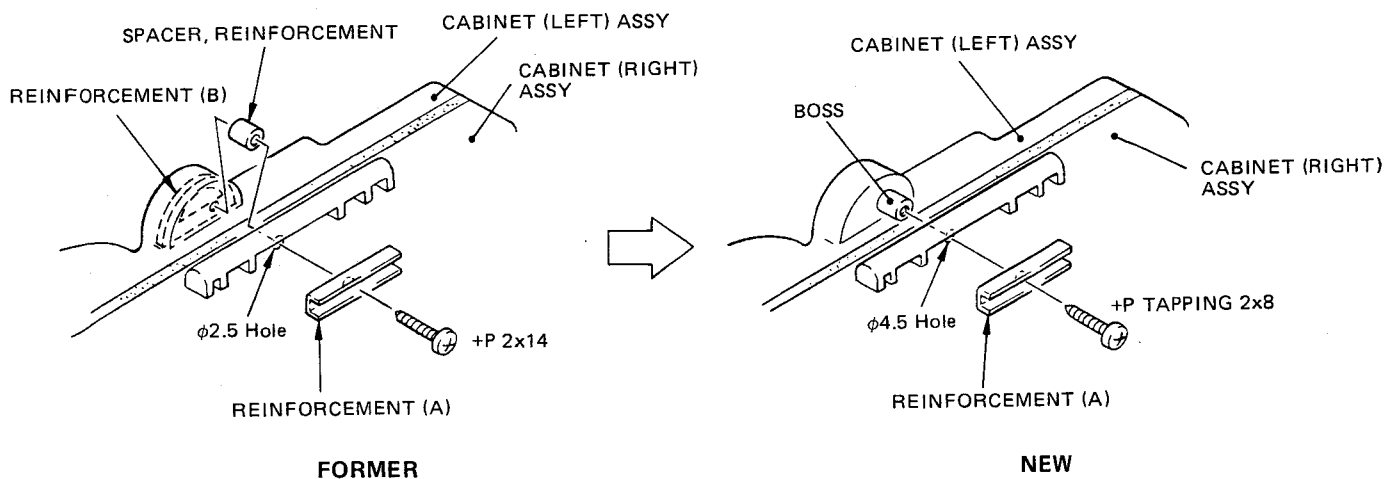
US Model
Canadian Model
CCD-SP7
E Model
CCD-SP5

SUPPLEMENT-1

SUBJECT:
EVF BLOCK PARTIAL MODIFICATION
AND OTHERS

This supplement updates the service manual to include production changed.
File this supplement with the service manual.

1. SOME PARTS OF THE CABINET (RIGHT) AND (LEFT) ASSEMBLIES HAVE BEEN CHANGED AS FOLLOWING FIGURE.



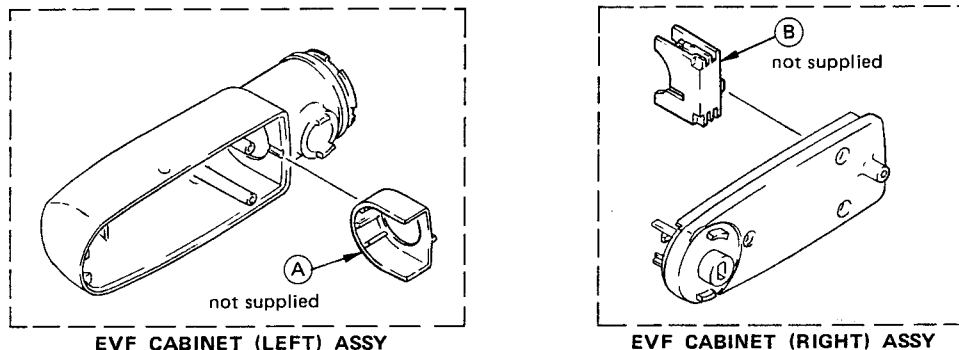
DESCRIPTION	FORMER	→	NEW
CABINET (RIGHT) ASSY	X-3724-588-1	→	X-3724-588- <u>2</u>
CABINET (LEFT) ASSY	X-3724-591-1	→	X-3724-591- <u>4</u>
REINFORCEMENT (A)	3-730-843-01	→	not changed
REINFORCEMENT (B)	Not supplied	→	deleted
SPACER, REINFORCEMENT	3-730-845-01 (BLACK) -11 (WHITE)	→	deleted
SCREW	3-730-857-01 +P 2x14	→	<u>3-728-668-01</u> +P TAPPING 2x8

2. EVF CABINET ASSEMBLIES HAVE BEEN MODIFIED AS FOLLOWING FIGURE.

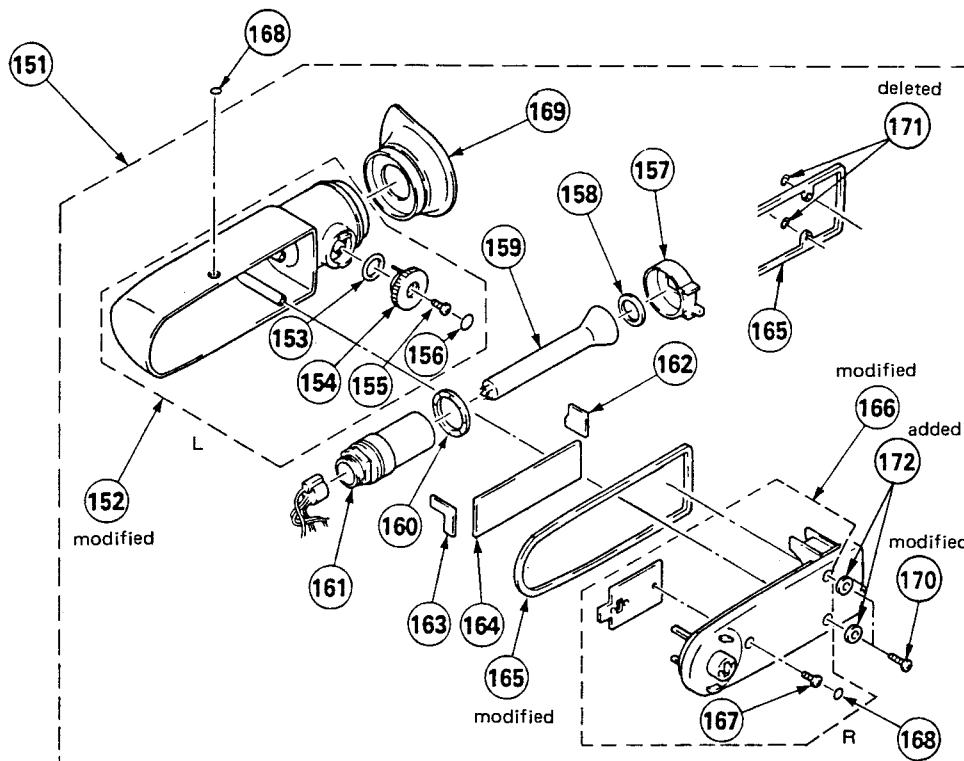
- Distinguishing method between the new type and the former type of EVF Cabinet Assemblies (RIGHT) and (LEFT).

New Type: (A) and (B) are detachable.

Former Type: There is no (A), and (B) is not detachable for it is in a body with EVF cabinet (RIGHT) assembly.



- Following modification has been occurred at the same time above-mentioned change. (Page 54.)

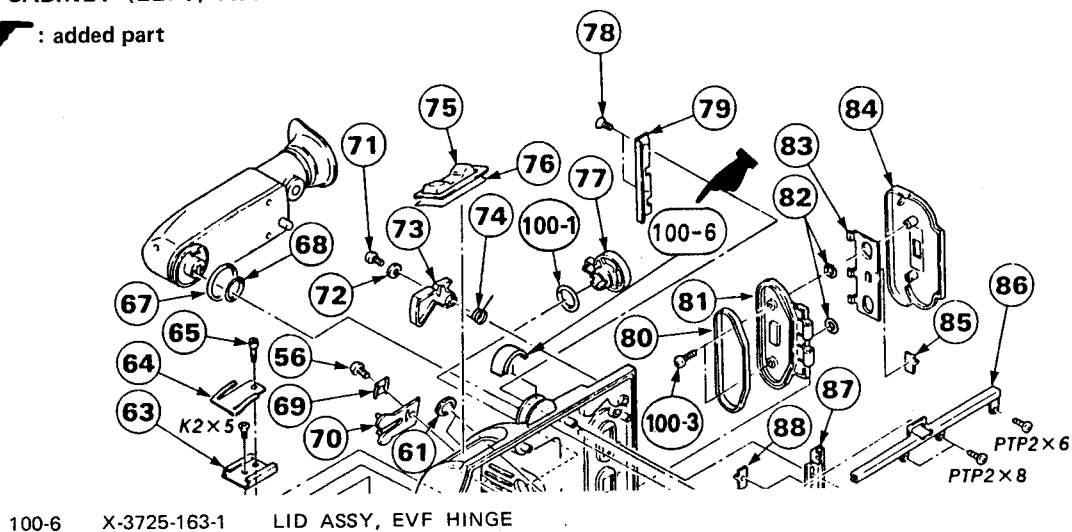


Ref. No.		Former	Description
152	modified	X-3725-116-1	CABINET (LEFT) ASSY, EVF (U/C Model) → X-3725-116-2
152	modified	X-3724-597-1	CABINET (LEFT) ASSY, EVF (E Model) → X-3724-597-3
165	modified	3-728-596-01	PACKING, EVF → 3-728-596-02
166	modified	X-3725-122-1	CABINET (RIGHT) ASSY, EVF (YELLOW) → X-3725-122-3
166	modified	X-3725-161-1	CABINET (RIGHT) ASSY, EVF (WHITE) → X-3725-161-2
170	modified	3-728-668-01	SCREW 2x8 (TYPE2) TAPPING → 3-730-883-01
171	deleted	3-730-840-01	SPACER, LOCK PLATE
172	added		O RING 1.6φx3.2φ 2-115-882-01

3. LID ASSY, EVF HINGE ADDITION (PAGE 52)

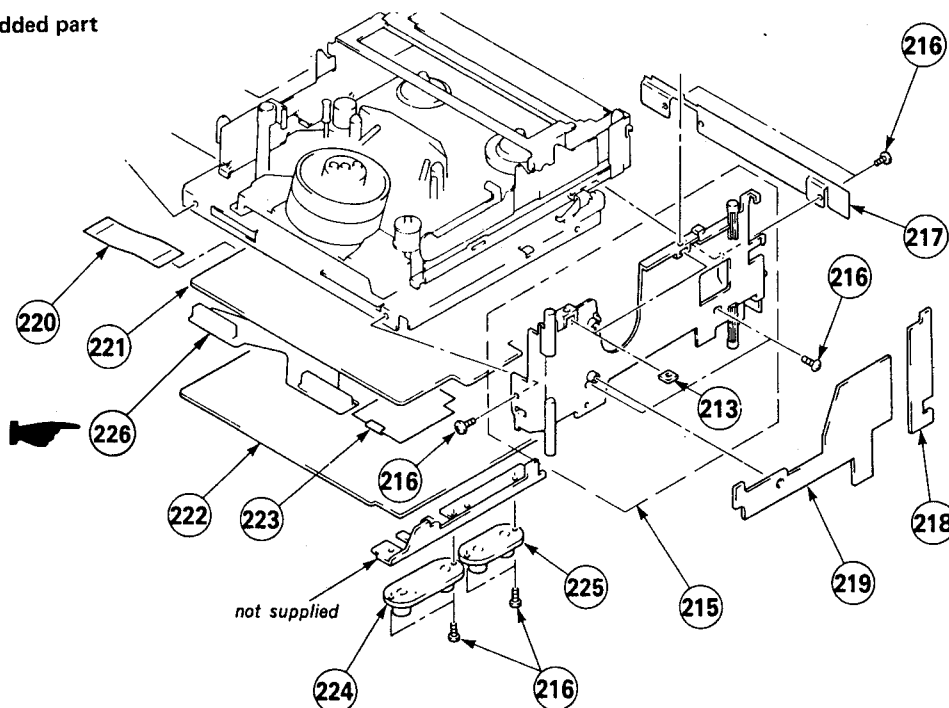
5-2. CABINET (LEFT) ASSEMBLY

 : added part



4. FP-118 FLEXIBLE BOARD ADDITION (PAGE 55)

 : added part



5. UPPER DRUM ASSEMBLY PART NUMBER CORRECTION (PAGE 58)

Applicable only for CCD-SP7 Service Manual (9-972-696-11) page 58.
It is already corrected on CCD-SP5/SP7 Service Manual (9-972-742-11).

386 A-7949-130-A DRUM ASSY, UPPER (DGR-20-R)

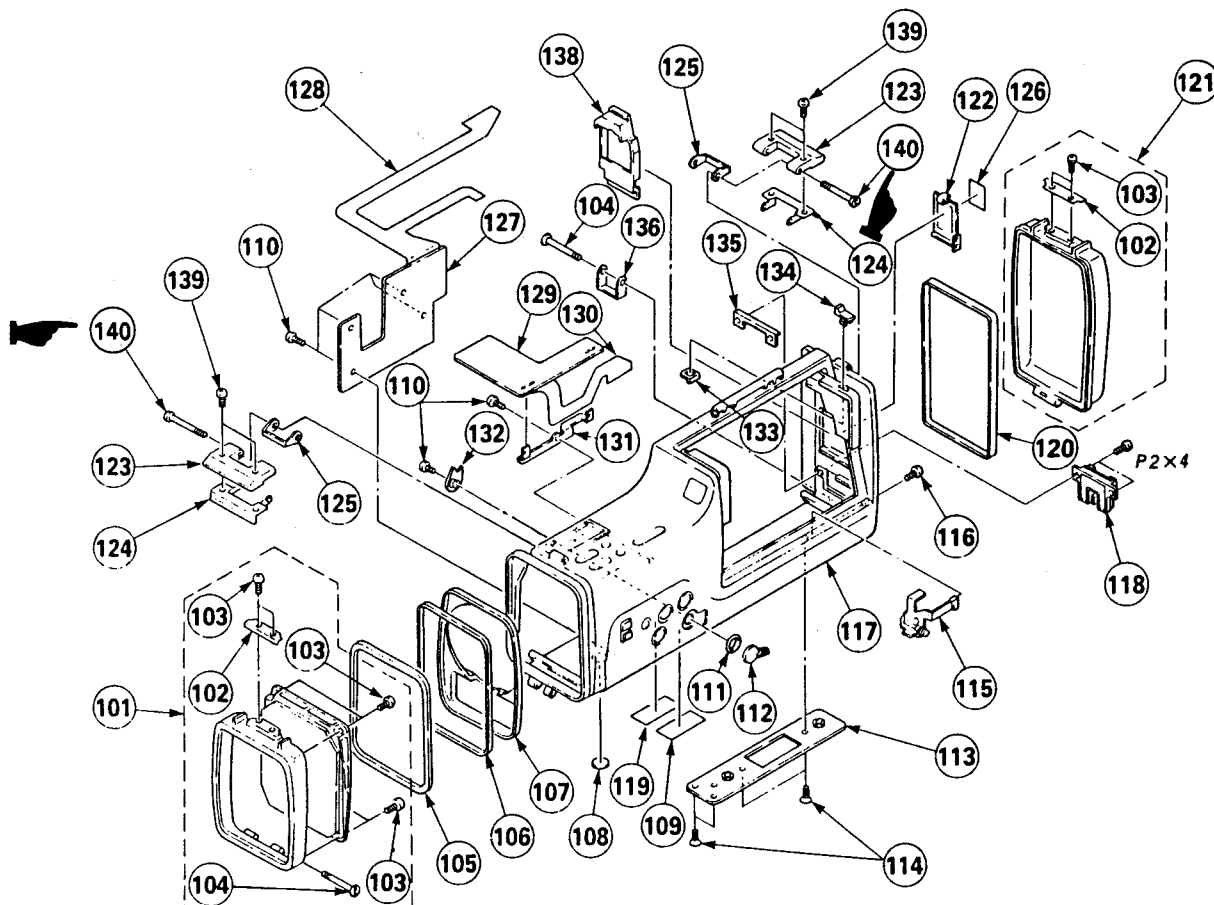
↓

A-7049-130-A DRUM ASSY, UPPER (DGR-20-R)

6. 104, SCREW, FRONT CABINET (3-728-559-01) HAD BEEN USED ON THREE POSITIONS, BUT ON TWO POSITIONS IT HAS BEEN CHANGED TO 140, SCREW, BUCKLE (S) (3-730-890-01). (PAGE 53)

5-3. CABINET (RIGHT) ASSEMBLY

 : changed part



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	A-7080-564-A	CABINET BLOCK ASSY, FRONT	102-104	121	A-7080-565-A	COVER (S) BLOCK ASSY, BATTERY	102, 103
102	3-728-508-01	RETAINER, BUCKLE (S)		122	3-726-587-01	LID, BATTERY CASE	
103	3-728-659-01	SCREW (2X5), TAPPING		123	3-726-583-01	BUCKLE (S)	
104	3-728-559-01	SCREW, FRONT CABINET		124	3-728-547-01	STOPPER, BUCKLE (S)	
105	3-728-550-01	ORNAMENT, FRONT		125	3-728-548-01	BRACKET, BELT	
106	3-728-555-01	PACKING, FRONT		126	*3-704-256-01	LABEL, CAUTION (U MODEL)	
107	3-726-595-01	PLATE, LIGHT TRANSMISSION		127	*A-7061-289-A	FC-19 BOARD, COMPLETE	
108	3-728-602-01	PLATE, BLIND, ADJUSTMENT HOLE		128	1-627-885-11	FP-144 FLEXIBLE BOARD	
109	*3-728-695-01	LABEL, MODEL NUMBER (U/C MODEL)		129	*A-7070-718-A	FD-9 BOARD, COMPLETE	
109	*3-730-882-01	LABEL, MODEL NUMBER (E MODEL)		130	1-627-886-11	FP-145 FLEXIBLE BOARD	
110	3-713-790-01	SCREW (M2X6), TAPPING, P3		131	*3-728-631-01	BRACKET, FD PC BOARD	
111	3-728-663-01	RING (P 7), O		132	3-726-568-01	HOLDER, AL KNOB	
112	3-726-585-01	KNOB, AL		133	3-726-571-01	HOLDER, EJECT KNOB	
113	3-728-551-01	SCREW, TRIPOD		134	3-726-570-01	KNOB, EJECT	
114	2-120-001-01	SCREW (2.6X8), TAPPING, (+) (K)		135	3-728-552-01	BRACKET, TERMINAL	
115	X-3725-146-1	KNOB ASSY, B LOCK		136	3-728-665-01	BRACKET (LOWER), BELT	
116	3-728-661-01	SCREW (M2X3)		138	3-728-666-01	COVER, LI	
117	X-3724-588-1	CABINET (RIGHT) ASSY	122, 138	139	2-115-893-01	SCREW (M1.7X2.5)	
118	1-535-658-11	TERMINAL BOARD		140	3-730-890-01	SCREW, BUCKLE (S)	
119	*3-704-367-01	LABEL (US MODEL)					
120	3-728-556-01	PACKING, BATTERY COVER					



CCD-F40/F340

SERVICE MANUAL



Photo: CCD-F40

US Model
Canadian Model
CCD-F40
E Model
CCD-F340

Handycam
Video 8

This manual contains the SUPPLEMENT-1.

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 1.43 cm/sec. LP: Approx. 0.72 cm/sec. (playback only)
Recording time	SP mode: 2 hours (P6-120)
Playback time	SP mode: 2 hours LP mode: 4 hours (P6-120)
Fast forward time	Approx. 6 min. 30 sec. (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 6 × power zoom lens f = 9-54 mm, F1.4 with macro Filter diameter: 46 mm
Auto focus system	Infrared autofocus
Color temperature	Auto: From the light at a tungsten lamp to the light on a slightly overcast day.
Minimum illumination	4 lux
Illumination range	4 lux-100,000 lux (0.4-9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack, -10dBs, at output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio input	Phono jack, -10 dBs, input impedance more than 47 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, -66 dBs, low impedance With 2.5-3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

— Continued on next page —

8 VIDEO CAMERA RECORDER
SONY®



Display in the viewfinder

Mode and caution indicators
Mode: REC/STBY
BACK LIGHT
ZERO MEM
Caution: BATTERY
DEW
TAPE END
CASSETTE
CAUTION
Time/date indication
Title color indication
Shutter speed indication

General

Power requirements Battery compartment
6 V/7.5 V
Power consumption 6.5 W (camera recording)
including the viewfinder

Installation Vertically
Operating temperature 0°C to 40°C (32°F to 104°F)
Storage temperature -20°C to +60°C (-4°F to +140°F)
Dimensions Approx. 116 × 127 × 302 mm
(w/h/d)
(4⁵/₈ × 5 × 12 in.)
Weight Approx. 1.1 kg (2 lb 7 oz)
excluding the battery and
cassette
Microphone Electret condenser
microphone, omni-directional
monaural type
Supplied accessories Lithium battery CR2025 (1)
Shoulder strap (1)

Precautions for replacement of CCD imager block.

- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light receiving section and for strong light not to get into there.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

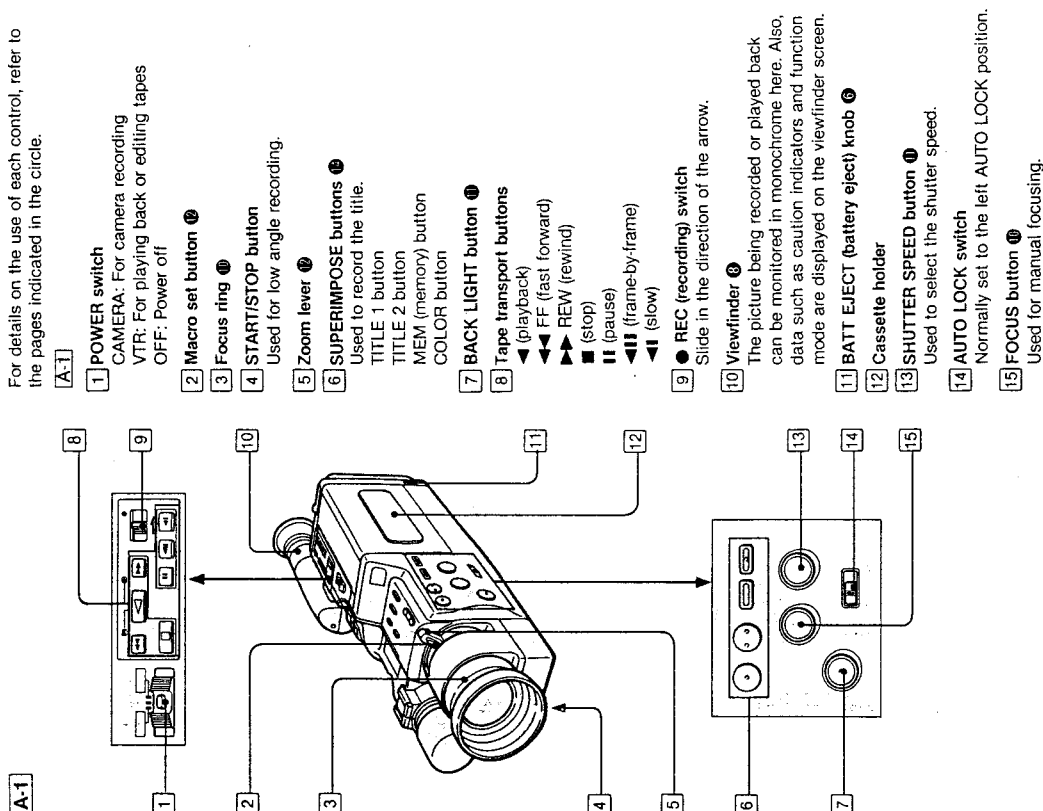
LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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SUPPLEMENT-1

1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS



SECTION 1 GENERAL

1-2. POWER SOURCES

- A-3**
- 30** Viewfinder lens adjustment ring
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.
- 31** Cassette eject button
- 32** Lithium battery compartment
- 33** Battery mounting surface
- 34** Hooks for shoulder strap
Attach a shoulder strap.
- 35** EDIT switch
Normally set it to the upper position. When editing tapes, set to EDIT.
- 36** VIDEO/AUDIO OUT (output) jacks (phono jacks)
- 37** RFU DC OUT (RFU adaptor DC output) jack (special minijack)
Supplies power to the RFU-89UCA RFU adaptor.
- 38** VIDEO/AUDIO IN (input) jacks (phono jacks)
- 39** Power zoom button
- 40** MIC jack and DC OUT (microphone power output) jack
Connect an external microphone. The MIC jack accepts Sony "plug-power" microphones and supplies power to them.
- 41** Grip strap
Adjust the length so that your thumb can easily manipulate the START/STOP button.
- 42** REMOTE connector (stereo mini-minijack)
- 43** (earphone) jack (minijack)
- 44** STANDBY switch
Slide up to set the unit to recording pause mode.
- 45** START/STOP button
Press to start and stop camera recording.
- A-4**
- To remove dust from inside the viewfinder **A-4**
Detach the eyepiece as illustrated and clean the surface of the Braun tube with a blower.

Selection of Power Sources

This manual shows the operations on one of the following power sources.

Place		Power source	Accessory to be used
Indoors	House	House current	AC power adaptor AC-V30 or AC-V55
	Outdoors	Battery pack	Battery pack NP-55 or NP-77
In the car		12 V or 24 V car battery	AC power adaptor AC-V55 and car battery cord DCC-16AW

Notes on power source

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not be used, keep it in its case.

Optional Accessories for Charging

- AC-V55 AC power adaptor
Two battery packs can be charged simultaneously.
- BCA-70 or BCA-80 battery charge adaptor, ACP-88 AC pack and NPA-35 battery adaptor
For charging, insert an NP-55 into the NPA-55.

Battery Pack — NP-55 or NP-77

First, charge the battery pack [B-1]

Use the AC-V30 AC power adaptor.
The charging time is about 1 hour for an NP-55 battery pack, or about 2 hours for an NP-77 battery pack.

- 1 Connect the AC-V30 to a wall outlet.
- 2 Attach the battery pack to the AC-V30.
Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack slide it as illustrated.

To attach the battery pack to the video camera recorder [B-2]

Align the right side of battery pack with the white line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

To remove the battery pack [B-3]

While pressing the BATT EJECT knob in the arrow direction, slide and pull out the battery pack as illustrated.

Battery life

A fully-charged NP-55 battery pack provides approximately 40 minutes of continuous camera recording, and an NP-77 provides approximately 80 minutes of continuous camera recording.

Notes

- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

When the video camera recorder is not in use, remove the battery pack.
If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

When the battery becomes weak [B-4]

The BATTERY indication and red lamp blink in the viewfinder and the  indication blinks in the display window.
Replace the battery pack with the fully charged one.

Using the NP-22 battery pack

A fully-charged NP-22 battery pack can operate this unit for approximately 60 minutes. For using the NP-22, an optional NPA-22 battery adaptor is necessary.

House Current — Using AC Power Adaptor [B-5]

- 1 Connect the AC power adaptor to a wall outlet.
- 2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
- 3 Align the right side of the connecting plate with the white line on the recorder, and while pressing the connecting plate, slide it to the right.

To remove the connecting plate for the AC power adaptor from the video camera recorder
While pressing the BATT EJECT knob on the recorder, slide and pull out the connecting plate.
The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

Car Battery [B-6]

Use the DCC-16AW car battery cord and the AC-V55 AC power adaptor.

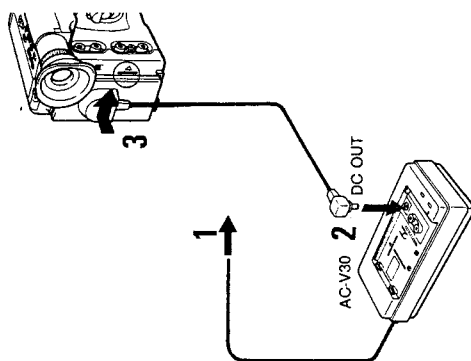
- 1 Insert the connecting cord supplied with the AC-V55 into the DC OUT jack on the AC-V55.
 - 2 Align the right side of the connecting plate with the white line on the recorder, and while pressing the connecting plate, slide it to the right.
 - 3 Connect the DCC-16AW car battery cord to the DC IN jack on the AC-V55 and to the cigarette lighter socket of a car (12 V or 24 V).
 - 4 Press the POWER switch on the AC-V55.
- After using, press the POWER switch on the adaptor again.

To remove the connecting plate from the video camera recorder

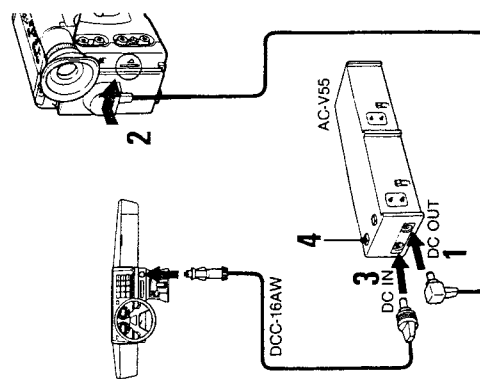
While pressing the BATT EJECT knob on the recorder, slide and pull out the connecting plate.

The optional DCP-55 DC pack (supplied with a car battery cord) can also be used to operate this recorder on a 12V or 24V car battery.

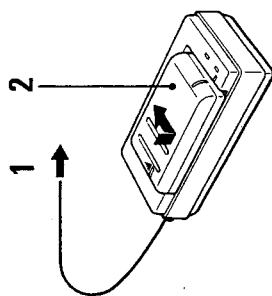
[B-5]



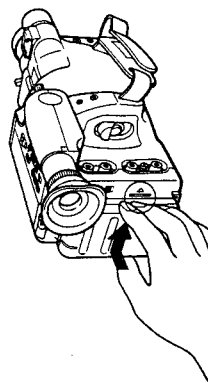
[B-6]



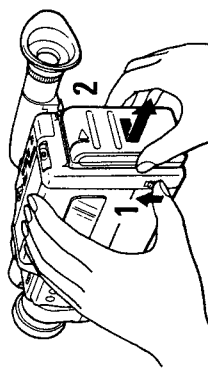
[B-1]



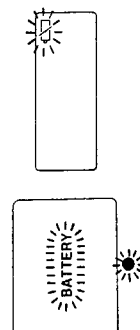
[B-2]



[B-3]



[B-4]

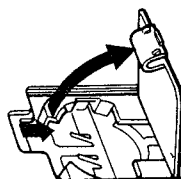


1-3. EASY CAMERA RECORDING WITH AUTOMATIC ADJUSTMENT

Lithium Battery [C-1]

To insert the lithium battery
This unit uses a lithium battery to activate the clock and to keep a title in memory. Before operating the unit for the first time, install the supplied lithium battery:

- 1 Open the cover of the lithium battery compartment on the battery mounting surface.
- 2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
- 3 Close the cover.



1

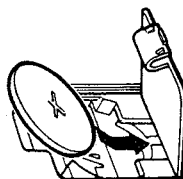
To remove the lithium battery [C-2]
Press the side of the battery in the direction as indicated for installation.

Lithium battery life
Approximately 1 year in normal operation. When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for about 7 seconds. In this case, replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Notes on lithium battery

- Keep the lithium battery out of the reach of children.
- Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

WARNING
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.



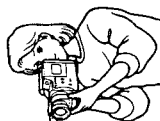
2

C-2

F-1

How to Record

Hold the camera recorder as in the illustration. If your nose touches the recorder, adjust the angle of the viewfinder. [F-1]



F-2

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Insert the cassette.
- 3 Set the AUTO LOCK switch to AUTO LOCK.
- 4 Slide the STANDBY switch up. [F-3]
The unit will enter the recording pause mode.
- 5 Press the START/STOP button.
Recording will start.

Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording

Press the START/STOP button again.
The unit will enter the recording pause mode.
Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

To check the last portion of the previous recording

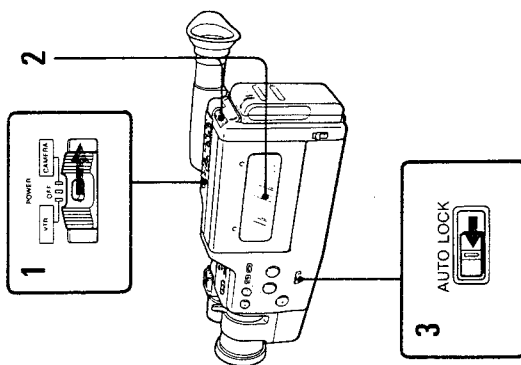
- 1 Set the recorder in recording pause mode by pressing the START/STOP button.
- 2 Press the - EDITSEARCH button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

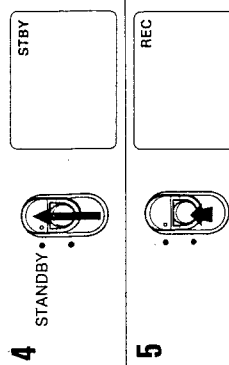
If the picture has not been recorded
The video head may be contaminated. Clean the heads using the Sony V8-25CL video head cleaning cassette.

After using

Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

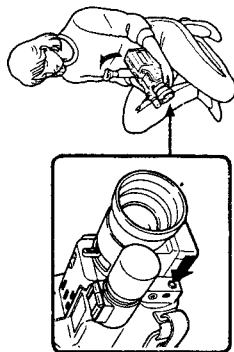


F-3

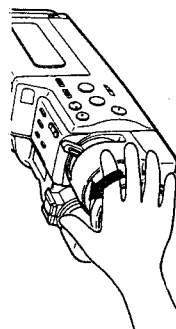


5

F-4



F-5



F-6

For low angle recording
The viewfinder can be turned 90 degrees up.
1 Slide the STANDBY switch up.
2 Press the START/STOP button on the front.

When attaching the lens hood, filter or conversion lens, hold the focus ring.

When removing, press it with the palm of your hand and turn it counterclockwise. **F-5**

Note on power source
If the POWER switch is moved during recording, the tape will stop.

Notes on light sources

- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

Notes on playback on another VCR

- To view the picture which has been recorded on this unit, set the monitor switch of the recorder for playback to the STD (standard) position.
- When recording on this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

Notes on automatic adjustment

- During recording, do not cover the white balance sensor.
- During recording with auto focusing, do not turn or stop the focus ring forcibly.
- Keep the lens and the white balance sensor clean.

Under certain conditions, auto focusing will not operate properly (see page 10).

Indications Inside the Viewfinder and in the Display Window **F-6 **F-7****

- [a] White mark
The FOCUS switch has been set to the manual condition.
- [b] Shutter speed (see page 11.)
- [c] Title color (see page 14.)
- [d] BACK LIGHT
The BACK LIGHT button has been pressed (see page 11.)
- [e] STBY
Recording is momentarily stopped (recording pause mode).
REC
- Recording is going on.
- [f] ZERO MEM
The ZERO MEM button has been pressed.
- [g] BATTERY
Weak battery.
- CAUTION
The unit cannot function normally.
- DEW
Moisture condensation inside the unit.
- CASSETTE
No cassette has been inserted or the safety tab of the inserted cassette is slid out.
- TAPE END
The tape is at its end.
- [h] Date or time (see page 13.)
- [i] Camera recording/battery lamp
Lights during camera recording. It blinks when the battery is exhausted.

F-7



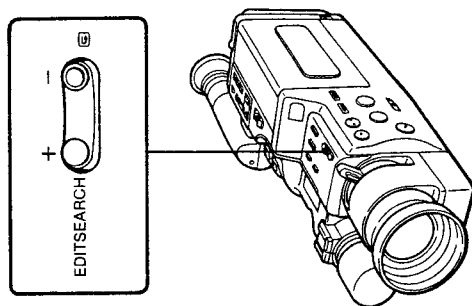
Indicators for caution

Display window F-7	Inside the viewfinder F-6
	BATTERY
	TAPE END
	CASSETTE
	DEW
	CAUTION

Indicators for the setting of the switch

Display window F-7	Inside the viewfinder F-6
	BACK LIGHT
	ZERO MEM
	■

[F-8]



Instant Playback on the Spot [E-8]

You can monitor the picture just recorded on the viewfinder screen.

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Slide the STANDBY switch up.
- 3 Press the "+" side of the EDITSEARCH button to rewind the tape.
- 4 Press the "-" side of the EDITSEARCH button to view the playback picture.

During Recording, to Record Again on the Previous Recorded Portion

- 1 Slide the STANDBY switch up.
- 2 Locate the point from which the recording is to begin again by monitoring the picture on the viewfinder screen.
 - ① Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "-" side to reverse the picture.
 - ② At the desired point, release the EDITSEARCH button.
The unit will be set to recording pause mode.
- 3 Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

1-4. INSERT RECORDING [1] • Using EDITSEARCH button

[G-1]



You can insert (record) video and audio simultaneously from the camera onto any recorded tape. [G-1]

Operation [G-2]

Monitor the picture being inserted on the viewfinder screen.

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Slide the STANDBY switch up to set the unit to recording pause mode.
- 3 Keep pressing the "+" or "-" side of the EDITSEARCH button and release the button at the point where the insert should end. The unit will be set to recording pause mode.
- 4 Display the counter in the display window and press the RESET button.
The counter is reset to zero.
(For an accurate ending point, press the RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
- 5 Keep pressing the "-" side of the EDITSEARCH button and release the button at the point where the insert should begin. Press the ZERO MEM button.
- 6 Press the ZERO MEM button.
The insert ending point is stored in memory.
- 7 Press the START/STOP button.
Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode

Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To insert the date or time

Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

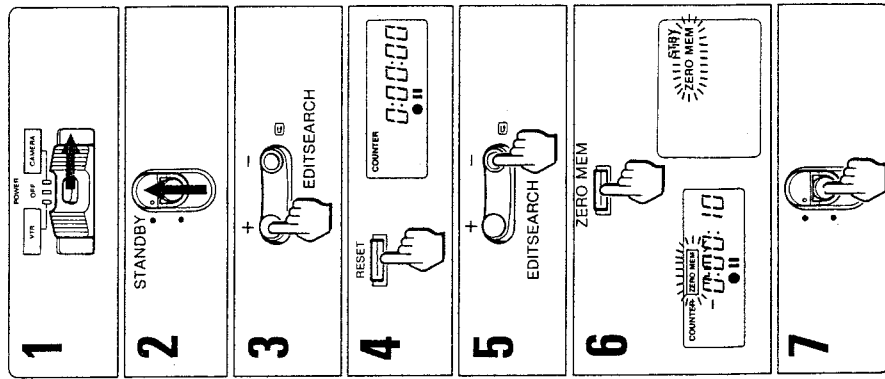
Notes on ZERO MEM Mode

ZERO MEM mode is cancelled automatically in the following cases.

- When an insert recording is completed.
 - When the position of the POWER switch is changed.
 - When the power is turned off.
 - When the cassette is ejected.
- To restore it, press the ZERO MEM button again.

Notes

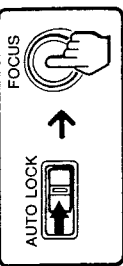
- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be set to stop mode.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted program.



1-5. MANUAL FOCUSING

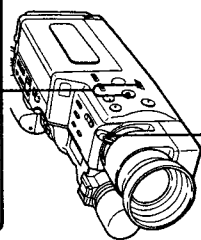
H-1

Use manual focusing when shooting subjects difficult to focus automatically (listed below).

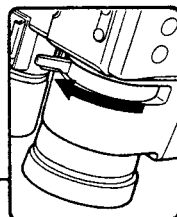


1

- 1 Set the AUTO LOCK switch to the right and press the FOCUS button.
- 2 Turn the manual zoom lever to the telephoto position (54) to make the subject as large as possible in the viewfinder.
- 3 Turn the focus ring to achieve sharp focus.
- 4 Set the desired shot length using the manual zoom lever.



2



3



4



Some helpful hints

- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto. The figures on the focus ring indicate the distance between the subject and the lens surface.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

Poor Conditions for Auto Focusing IF2

To shoot subjects listed below you must use manual focusing.

- [a] Black objects which absorb the infrared beam**
Ex. dark curtains or shade

- [b] Objects in which the infrared reflection disperses**
Ex. a smooth slanting surface (Auto focusing functions when the camera is aimed squarely at the subject.)

- [c] Objects in which the infrared reflection is not sufficient**
Ex. bushes, grass or plants in the telephoto position

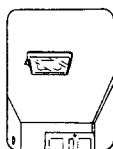
- [d] Objects in which the infrared beam is reflected too much**
Ex. traffic signs, a white wall, a mirror, or a subject through plate glass

- [e] Objects not solid**

Ex. fireworks, candle flame or smoke



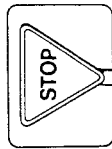
[a]



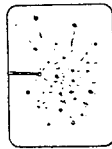
[b]



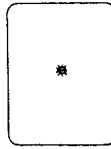
[c]



[d]



[e]



[f]



[g]



[h]

- [f] Extremely small objects which do not cover more than 1/10 of the viewfinder's area**
Ex. insects

- [g] When there are other objects between the shooting object**
Ex. an animal inside a cage or baby inside a cot

- [h] Moving objects**
Ex. a crowd or sports with lots of movement

- **Objects which emit infrared beams themselves**
Ex. automatic doors or fluorescent lights

- **Objects 10–60 meters (33–200 feet) away from the recorder**

Other Uses of Manual Focusing

- When using special effects lenses or filters
 - When shooting still subjects on a tripod
 - To save battery wear
- (When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 12.

Auto focusing system of this camera recorder

This recorder adjusts focus automatically by emitting an infrared beam at the objects to be shot and then detecting the reflected beam. When the subject is approximately 3 meters away from the camera recorder, the focus is sharpest in the center of the screen. The camera recorder has the tendency, however, to focus a bit lower to the right when the subject is within 3 meters, and a bit higher to the left when the subject is more than 3 meters away.

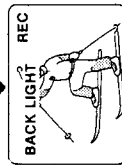
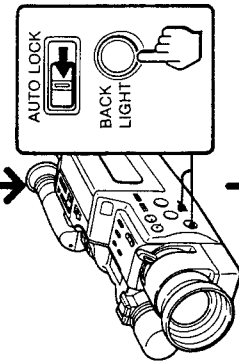
Note

As the auto focusing of this camera recorder utilizes an infrared beam, it might malfunction when you use the camera recorder near another equipment that also emits an infrared beam such as a TV or VCR remote commander, or another camera recorder that uses an infrared beam for auto focusing. It might also cause malfunctioning of such equipment.

1-6. BACK LIGHT ADJUSTMENT 1

1

This unit adjusts the iris automatically. However, when shooting a subject that is backlit, set the AUTO LOCK switch to the right and press the BACK LIGHT button.



The BACK LIGHT indication appears when the BACK LIGHT button has been pressed.

After shooting that particular scene, be sure to press the BACK LIGHT button again to release it. Otherwise the recorded picture will be too bright. The BACK LIGHT indication goes out.

Note
The function will be released once the POWER switch is set to OFF.

Automatic White Balance Function

The automatic white balance function allows the unit to record an image with natural color tones in most kinds of light. This insures that white will always be recorded as white regardless of the light source.

Notes

- The auto white balance may not function under the following conditions.
 - Insufficient light
 - When lighting conditions change rapidly
 - When the camera is in a different light condition from the recorded subject ex. when the subject is under a spotlight when the subject is outdoors and the camera is indoors
 - Special light sources such as a sodium lamp
- Do not cover the white balance sensor.

1-7. SHUTTER SPEED ADJUSTMENT

Example use	Recommended shutter speed
- On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000) - Recording the skiers	1/4000 or 1/1000
- On overcast days, recording a moving merry-go-round or jet-coaster - Recording outdoors from inside a vehicle (for stable shooting)	1/250
- Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) - Recording indoors (for stable shooting)	1/100

J-3

- Set the AUTO LOCK switch to the right and press the FOCUS button.
- Press the SHUTTER SPEED button repeatedly until the desired shutter speed indication appears on the viewfinder screen. Each time the SHUTTER SPEED button is pressed, the indication changes:
No indication → 4000 → 1000 → 250 → 100
(1/60) (1/4000) (1/1000) (1/250) (1/100)

Auto focus will not function in this case. When shooting, use manual focusing.

Notes

- When shutter speed 1/250 or more is selected, recording must be done under sunlight or video light.
- When the recording is done under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary ("flicker"). If flickers of fluorescent lamps affect the recording in 50 Hz areas, set the shutter speed to 1/100.
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.

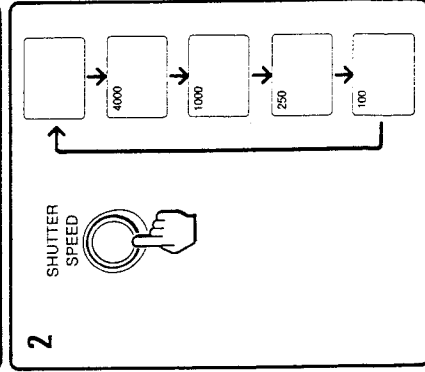
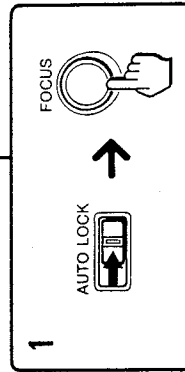
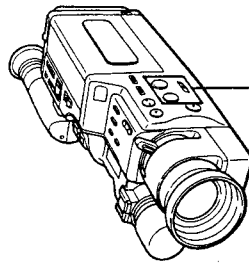
J-1



J-2



J-3



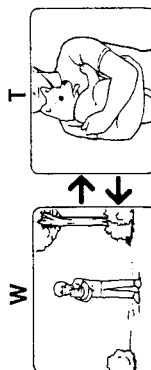
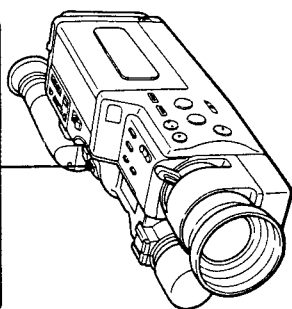
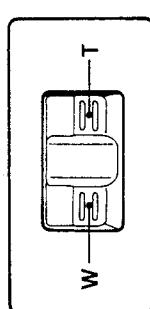
When a fast-moving subject is recorded at a normal shutter speed, its still picture may not be seen when played back [J-1]. This can be improved by increasing the shutter speed [J-2]. The shutter speed of this unit can be selected from five speeds, 1/60 (normal speed), 1/4000, 1/1000, 1/250, 1/100.

However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.

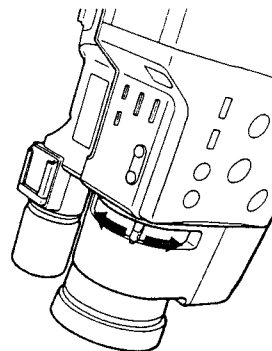
Choose an appropriate shutter speed according to the place and situation. See the chart below for examples.

1-8. ZOOMING

[K-1]



[K-2]



The size of the subject in the scene can be changed.

Power Zoom [K-1]

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle. The zoom ring will move automatically.

Manual Zoom [K-2]

— to create a dramatic effect

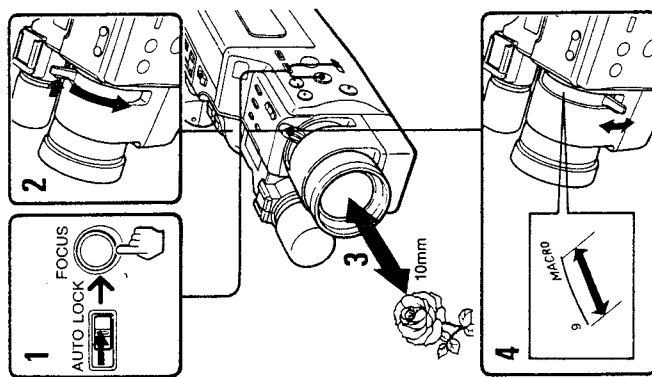
Turn the manual zoom lever upward for telephoto and downward for wide-angle.

For more zooming effect

- Use an optional conversion lens (VCL-1546A or VCL-0746A).
Auto focus, however, will not function in that case.
- The focal length of this unit is 9 mm to 54 mm. Converted into the focal length of a 35 mm camera, this means approximately F-48 mm to 288 mm.

1-9. CLOSE-UPS (MACRO)

[L]



Even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

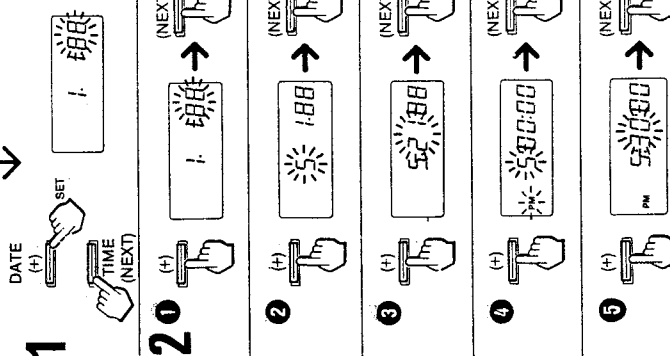
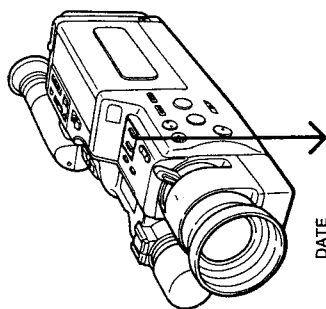
- 1 Set the AUTO LOCK switch to the right and press the FOCUS button.
- 2 Turn the zoom lever to the MACRO position, pressing the orange macro set button.
- 3 Bring the recorder as close as necessary to obtain the desired subject size.
The subject can be as close as approximately 10 mm ($\frac{3}{8}$ in.) from the lens surface.
- 4 Turn the zoom lever within the MACRO range in orange to focus sharply.

Notes

- Auto focusing does not function properly in macro shooting.
- If the subject is closer than 10 mm, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.
- Zooming is not possible during macro recording. To change the size of the subject, move the camera recorder closer or further away.

1-10. RECORDING DATA OR TIME

M-1



Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

Before setting the date and time, make sure that the battery pack and lithium battery are installed.

To Set Date and Time M-1

- 1 Press the DATE and TIME SET buttons simultaneously for **more than 3 seconds**. The date indication will appear in the display window (date/time setting mode). The DATE button now functions as the + button and the TIME button functions as the NEXT button.
- 2 Adjust the 1 year, 2 month, 3 day, 4 hour and 5 minute in sequence, following the illustration. First adjust the blinking digits with the + button, and then press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME SET (NEXT) button again.

- The + button can be pressed in two ways
- When you keep the button pressed, the digits will advance continuously.
 - When you press and immediately release the button, the digits will advance by one.

To check the preset date and time
Press the DATE or TIME SET button in the recording pause mode. When the same button is pressed again, the indication goes off.

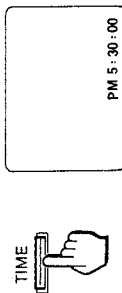
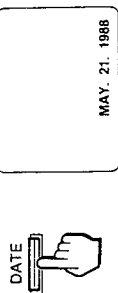
To readjust an incorrect date or time
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

To Record the Date or Time M-2

During camera recording or in recording pause mode, press the DATE or TIME SET button to display the date or time on the viewfinder screen.

The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME SET button again. The picture recording will continue.



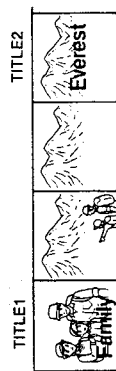
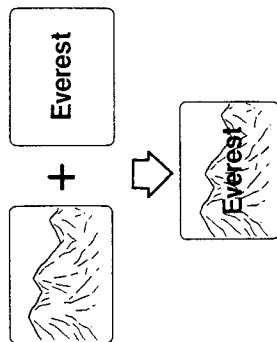
M-2

1-11. RECORDING A TITLE

N-1

Before recording, memorize a title or figure. The memorized title or figure is superimposed onto the picture being recorded. [N-1]

- Two kinds of titles or figures can be memorized.
- The color of the title or figure can be selected from 8 colors.



Preparations

To make a desired title card
Use a white and plane card and draw the title on it with a deep color (black is recommended for the best result) in thick letters.
If contrast is clear, a signboard can be memorized like the title card.

Before memorizing the title

- 1 Make sure that the lithium battery is installed. See page 7.
- 2 While pressing the small button, set the POWER switch to CAMERA.
- 3 Slide up the STANDBY switch to set the unit in the recording pause mode.

Notes

- When deciding the title size, check the effective picture size on your video monitor.
- To record the title, fix the title card and the video camera recorder.
- To memorize a title, use of an appropriate light is recommended for a better result.

To Memorize the Title [N-2]

- 1 Point the camera to the title card and adjust the focus.
- 2 Press the TITLE 1 or 2 button.
- 3 Press the MEM button to memorize the title.
- 4 Select the title color while observing the color indication in the viewfinder. Each push on the COLOR button cyclically changes the color, as follows:
WHT (white) → BLUE → GRN (green) → CYAN
↓
BLK (black) → YEL (yellow) → VIO (violet) → RED
- 5 Press the TITLE 1 or 2 button (pressed in step 2) to turn off the title.

Notes

- The color indication in the viewfinder is not recorded on the tapes.
- You can change the title color even after starting the recording.

To check the title

To check the memorized title, press the TITLE 1 or 2 button. To turn off the title, press the button again.

To Record the Title

To record the title from the beginning
Press the TITLE 1 or 2 button in recording pause mode.

To record during camera recording

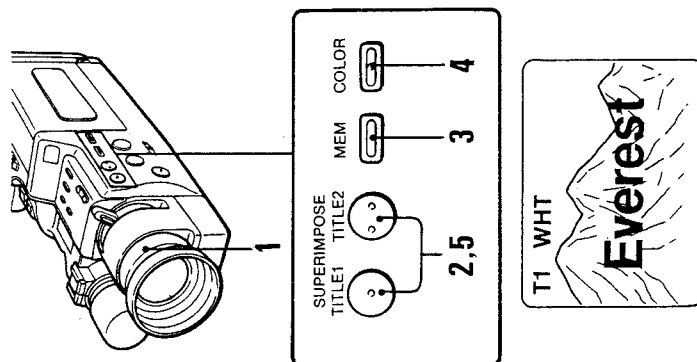
Press the TITLE 1 or 2 button at the point from which the title is to be inserted.
The memorized title will be recorded together with the picture.

To stop recording the title

Press the TITLE 1 or 2 button again. The picture recording will continue.

To record the title several times

By repeating the above procedure, you can record the title as many times as desired.



1-12. USE OF AN EXTERNAL MICROPHONE

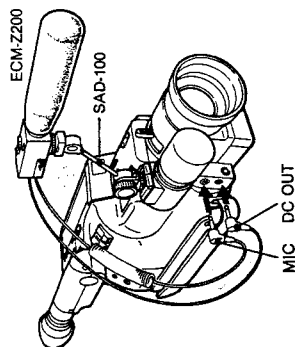
[O-1]

The built-in microphone picks up sounds equally from all directions (omni-directional, monaural type).

By using an optional ECM-Z200 or ECM-K120 microphone, you can enjoy more efficient audio recording.

The ECM-Z200 can zoom the sound as the lever is slid.

First, attach to the optional SAD-100 external microphone shoe. **[O-1]**

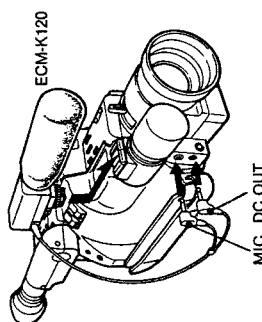


The ECM-K120 can pick up sound in 3 zones and switch from zone to zone as the selector is set. **[O-2]**

A variety of optional microphones.

- Omni-directional microphone: To pick up sounds equally from all directions
- Uni-directional microphone: To pick up specific sounds
- Supercardioid microphone: To isolate a sound
- Zoom microphone: To allow the field of recording to be changed.

[O-2]

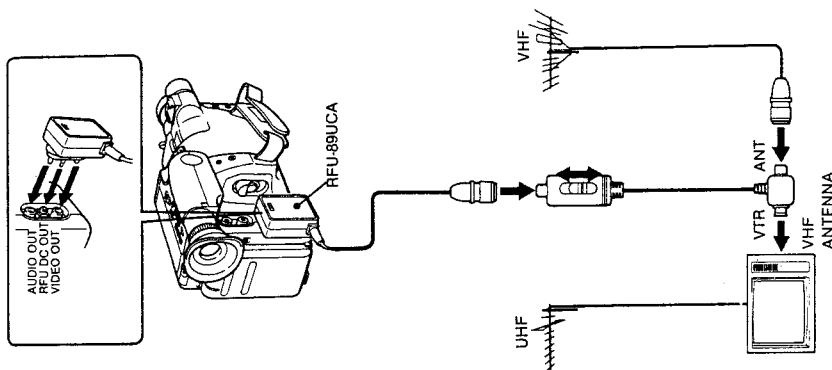


Note
The built-in microphone will not operate when an optional microphone is connected to the MIC jack.

1-13. PREPARATION FOR PLAYBACK

[P-1]

When the VCR is connected to the TV.



Connecting a TV

Connecting a TV without audio/video input connectors **[P-2]**

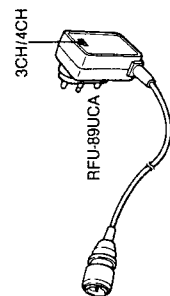
- 1 Connect the RFU-89UCA RFU adaptor to the CCD-F40.
- 2 Connect the VHF antenna, CCD-F40 and TV to the antenna selector (supplied with the RFU-89UCA).
Use a 75-ohm coaxial cable for antenna connection.
- 3 Set the selector switch on the antenna selector as follows:

For viewing a playback picture → VTR
For viewing TV programs → ANT

On the TV channel for the video camera recorder **[P-2]**

Whenever you view the playback picture, set the channel selector of the RFU-89UCA to either VHF channel 3 CH or 4 CH and select the same channel on the TV.

[P-2]

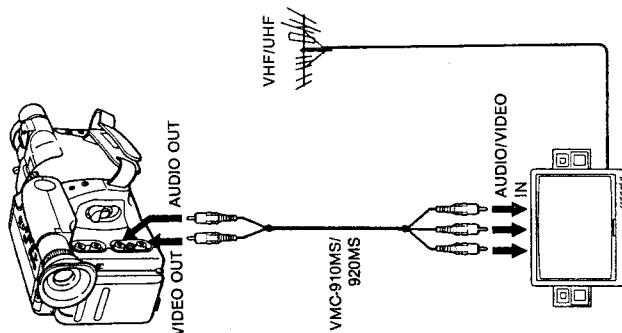


1-14. PLAYBACK

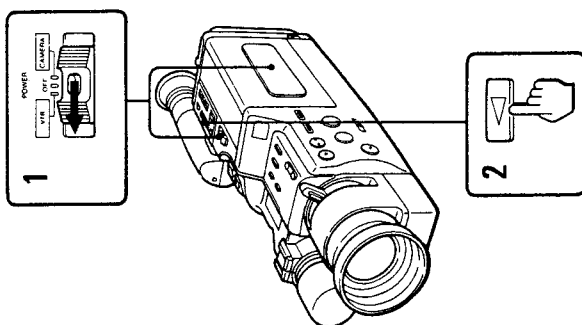
P-3 Connecting a TV (or color monitor) equipped with audio/video input connectors

- Leave the TV antenna cable connected to the TV.
- 1 Connect the CCD-F40 to the TV using the optional VMC-910MS/920MS audio/video cable.
 - 2 Set the TV/VIDEO selector button on the TV as follows:

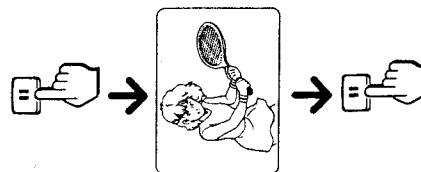
For viewing a playback picture → VIDEO
For viewing TV programs → TV



Q-1



Q-2



Turn on the TV (or color monitor), and select the channel for viewing a playback picture (or set the TV/VIDEO selector to VIDEO).

- 1 While pressing the small button, set the POWER switch to VTR, and insert a cassette. **Q-1**
- 2 Press the $\blacktriangleleft$ button. Playback will start.

To stop the tape, press the $\blacksquare$ button.

After using, be sure to set the POWER switch on the recorder to OFF.

To view a still picture **Q-2**

Press the $\blacksquare$ button during playback. To resume playback, press the $\blacksquare$ button again.

Monitoring a High-Speed Picture

During playback

- 1 In the playback mode, press the $\blacktriangleleft$ or $\blacktriangleright$ button.

The picture will be monitored at high speed as long as it is kept pressed.

- 2 Release the $\blacktriangleleft$ or $\blacktriangleright$ button at the desired point.

Normal playback will resume.

During fast-forward or rewind

- 1 Press the $\blacktriangleleft$ button in fast-forward mode or press the $\blacktriangleright$ button in rewind mode.

The picture is displayed while the button is kept pressed.

- 2 Release the $\blacktriangleleft$ or $\blacktriangleright$ button to resume normal fast-forward or rewind mode.

To View the Frame-by-Frame Playback Picture

Press the $\blacktriangleleft$ button during playback or in still picture mode.

To resume normal playback, press the $\blacktriangleleft$ button.

To View the Slow Motion Picture

Press the $\blacktriangleleft$ button during playback or in still picture mode.

To resume normal playback, press the $\blacktriangleleft$ button.

Notes

- If you move the position of the POWER switch during playback, the tape will stop. When you move the POWER switch to CAMERA in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- Sreaks will appear and the sound will be muted in the high-speed picture.

1-15. INSERT RECORDING 2

S

To adjust the frame-by-frame and slow playback pictures

In slow playback mode, press the "F" or "L" side of the EDITSEARCH button until a clear picture is obtained. Repeat adjusting until a still picture is displayed clearest.

To adjust the still picture

If the still picture appears to shake, press the "F" or "L" side of the EDITSEARCH button until the picture stabilizes.

Note

The adjustment is retained in memory as long as the lithium battery is installed. Readjustment is only required when the equipment used for playback is changed or when tapes recorded on other equipment are played back on this unit. The noise may not be eliminated completely when a tape recorded on other equipment is played back in still or slow picture mode.

To Insert a TV Program or a Picture from Another VCR S

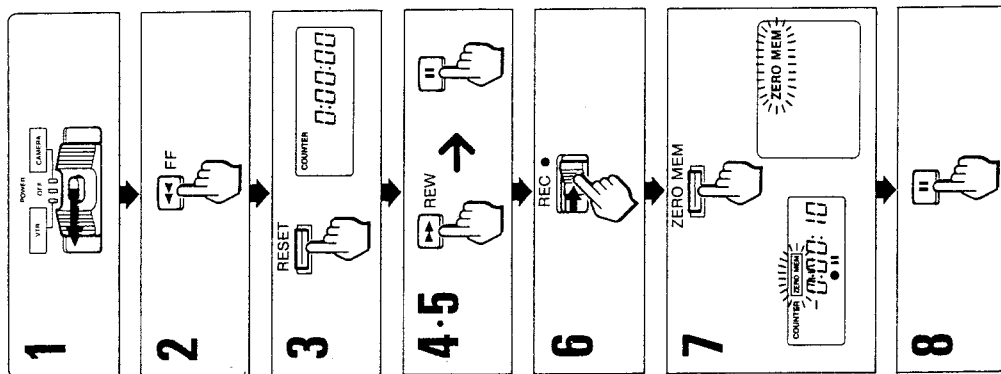
Monitor the picture being inserted on the viewfinder screen.

- 1 While pressing the small button, set the POWER switch to VTR.
- 2 Locate the point on the tape where the insert should end by pressing the ◀ button during playback.
- 3 Display the counter in the display window and press the RESET button. The counter is reset to zero.
- 4 Press the ▶▶ button during playback to rewind the tape a little further than the point where the insert should begin.
- 5 Release the ▶▶ button to resume playback and press the || button at the insert starting point.
- 6 Slide the REC ● switch in the arrow direction to set the unit to recording pause mode.
- 7 Press the ZERO MEM button. The insert ending point is stored in memory.
- 8 To start recording, press the || button.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode

Press the ZERO MEM button so that the ZERO MEM indicator disappears.

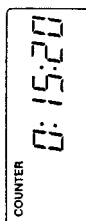


1-16. USE OF THE TAPE COUNTER

T-1

During recording or when a tape recorded in the SP mode is played back, the digits on the counter indicate the actual recording or playback time. When a tape recorded in LP mode on another recorder is played back on this unit, the counter counts approximately half the actual playback time.

E.g. When the counter indicates "0:15:20" during playback of an LP-recorded tape, the tape was played back for approximately 30 minutes 40 seconds from the counter zero position. **T-2**



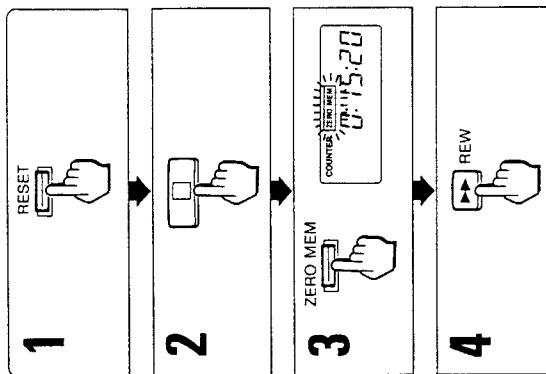
T-2

To Index the Whole Tape

Press the RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

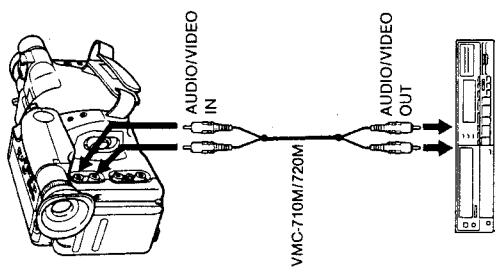
Notes

- The counter reading and the point of the tape may not correspond exactly.
- The counter also operates for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast forward and rewind operations or after playing back in slow mode for a long time.

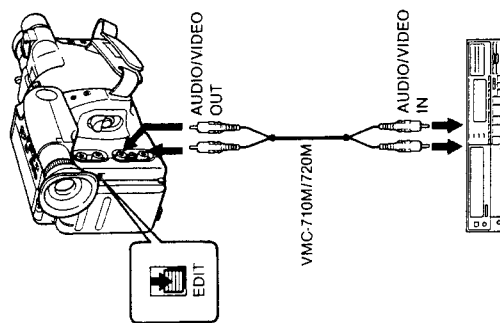


1-17. TAPE EDITING

U-1



U-2



To Edit from Another VCR to the CCD-F40 **U-1**

- 1 While pressing the small button, set the POWER switch on the CCD-F40 to VTR.
- 2 Start playback on another VCR.
- 3 Start recording on the CCD-F40.

To Edit from the CCD-F40 to Another VCR **U-2**

- 1 While pressing the small button, set the POWER switch on the CCD-F40 to VTR and turn on the other VCR.
- 2 Slide the EDIT switch on the CCD-F40 to EDIT.
- 3 Set the input selector on the VCR to LINE.
- 4 Press the **II** button on the CCD-F40 during playback at the point where you want to start recording.
- 5 Press the record button on the other VCR, pressing the **II** button.
- 6 Release the **II** buttons on both units. Recording will start.

When the VCR to be used is a stereo type, use the VMC-910MS/920MS connecting cord.

After editing, turn off both units and be sure to slide the EDIT switch to the upper position.

To cut off an unnecessary portion

Press the **II** button on the recorder at the beginning of the unnecessary portion.
Release it where you want to resume recording.

Function of the EDIT switch

Slide this switch down whenever you edit tapes. Signal loss that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.
When recording or playing back normally, keep this switch in the upper position.

1-18. TROUBLESHOOTING

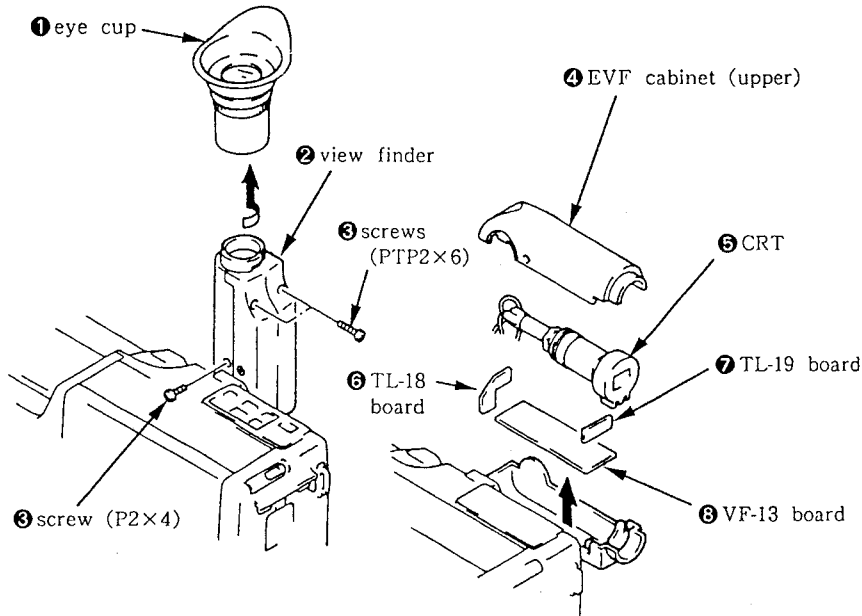
Symptom	Cause (Trouble Indicator)	Procedure
The power will not turn on.	The battery is not attached.	Attach the battery.
	The battery is exhausted.	Use a new battery.
	The AC power adaptor is not connected to a wall outlet.	Connect the adaptor to a wall outlet.
	The tape is affixed to the drum.	Remove the cassette with the cassette eject button.
	The tape is at its end. (TAPE END)	Rewind the tape or use a new one.
The START/STOP button does not operate.	The POWER switch is set to VTR.	Set it to CAMERA.
	The tab on the cassette is out (red). (CASSETTE)	Use a new cassette or slide the tab.
	POWER switch is set to CAMERA or OFF.	Set it to VTR.
The tape does not move when a tape transport button is pressed.	The tape is at its end.	Rewind the tape or use a new one.
	While being operated in the CAMERA mode, the recorder has been in the pause mode for more than 5 minutes	Slide down the STANDBY switch, and slide it up again.
The power turns off.	The battery is exhausted. (BATTERY)	Use a charged battery.
	The contrast between the subject and background is too high; the camera is not malfunctioning.	—
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	The ambient temperature is too low.	—
	The battery pack has not been charged fully.	Charge the battery pack again.
The cassette cannot be removed from the compartment.	The battery is exhausted.	Use the charged battery or the AC power adaptor
	The AUTO LOCK switch is set to the right.	Set the AUTO LOCK switch to AUTO LOCK.
The auto focusing function does not work.	Shooting conditions are not suitable for auto focusing operation (See page 10).	Focus manually.
	The white balance sensor is covered.	Clear the sensor.
The color of the playback is not appropriate.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens.
The image on the viewfinder screen is not clear.	The EDIT switch is set to the "EDIT" position.	Set the EDIT switch to the upper position.
The playback picture is not clear.	The channel for the VCR is not adjusted on the TV.	Adjust the TV.

Symptom	Cause (Trouble Indicator)	Procedure
The playback picture is too bright.	The BACK LIGHT button was not released during recording. (BACK LIGHT)	—
The picture is noisy.	The video heads may be contaminated.	Clean the heads using the Sony V8-25CL video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If the V8-25CL cleaning cassette is not available in your area, have the heads cleaned at the nearest Sony service facility.
No function except for cassette ejection works.	Moisture condensation has occurred. (DEW)	Remove the cassette and leave the unit for at least an hour.
The indicators in the viewfinder blink.	The lithium battery is not installed. (COUNTER)	Install the lithium battery.
	The lithium battery is exhausted. (COUNTER)	Use a new battery

SECTION 2 DISASSEMBLY

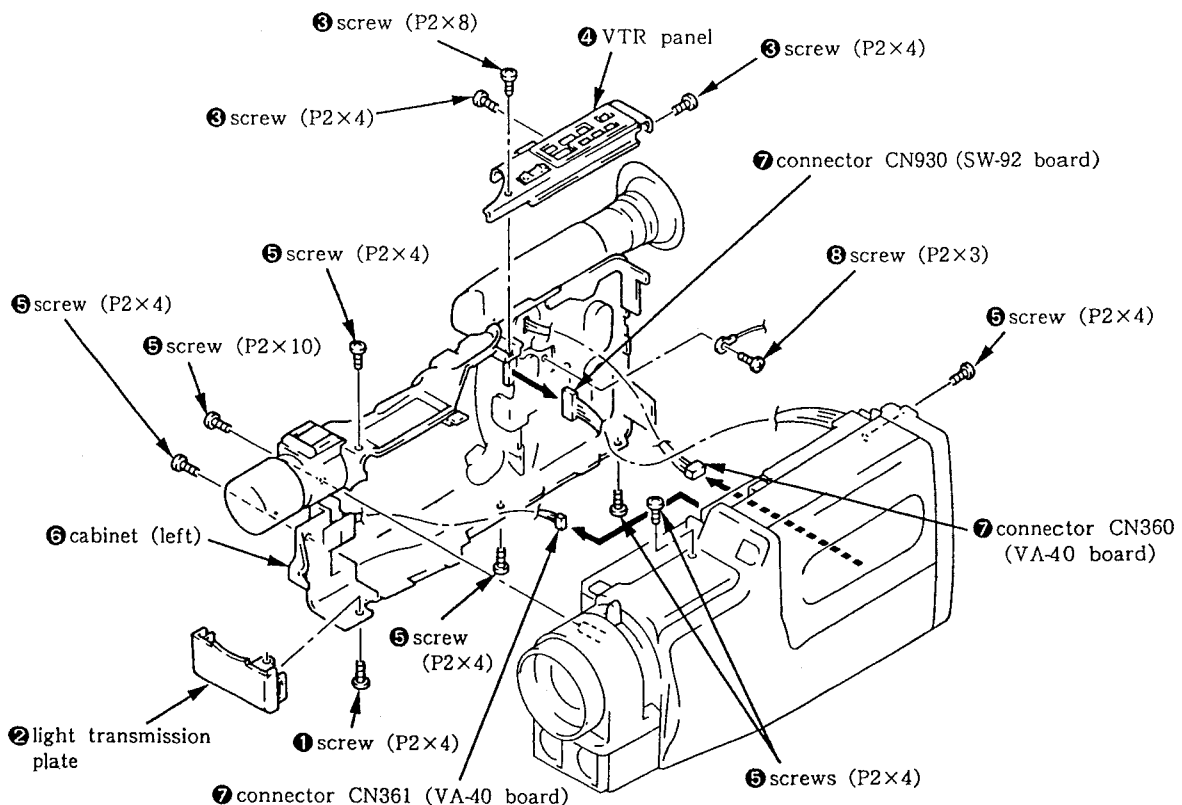
2-1. REMOVING THE VIEW FINDER

- 1) Turn the eye cup ① counterclockwise and remove.
- 2) Raise the view finder ②.
- 3) Remove three screws ③.
- 4) Put the view finder ② down on the bench.
- 5) Remove the EVF cabinet (upper) ④, and separate the CRT ⑤, TL-18 board ⑥, TL-19 board ⑦ and VF-13 board ⑧.



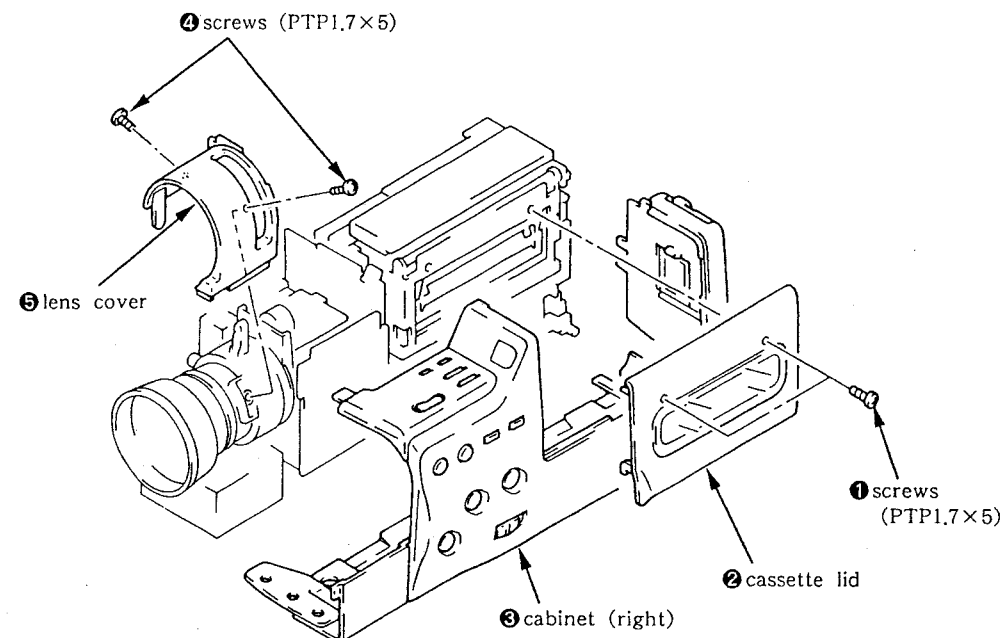
2-2. REMOVING THE CABINET (LEFT)

- 1) Remove a screw ① and detach the light transmission plate ②.
- 2) Remove three screws ③ and separate the VTR panel ④.
- 3) Remove seven screws ⑤ and take off the cabinet(left) ⑥.
- 4) Unplug three connectors ⑦.
- 5) Remove a screw ⑧.



2-3. REMOVING THE CABINET (RIGHT)

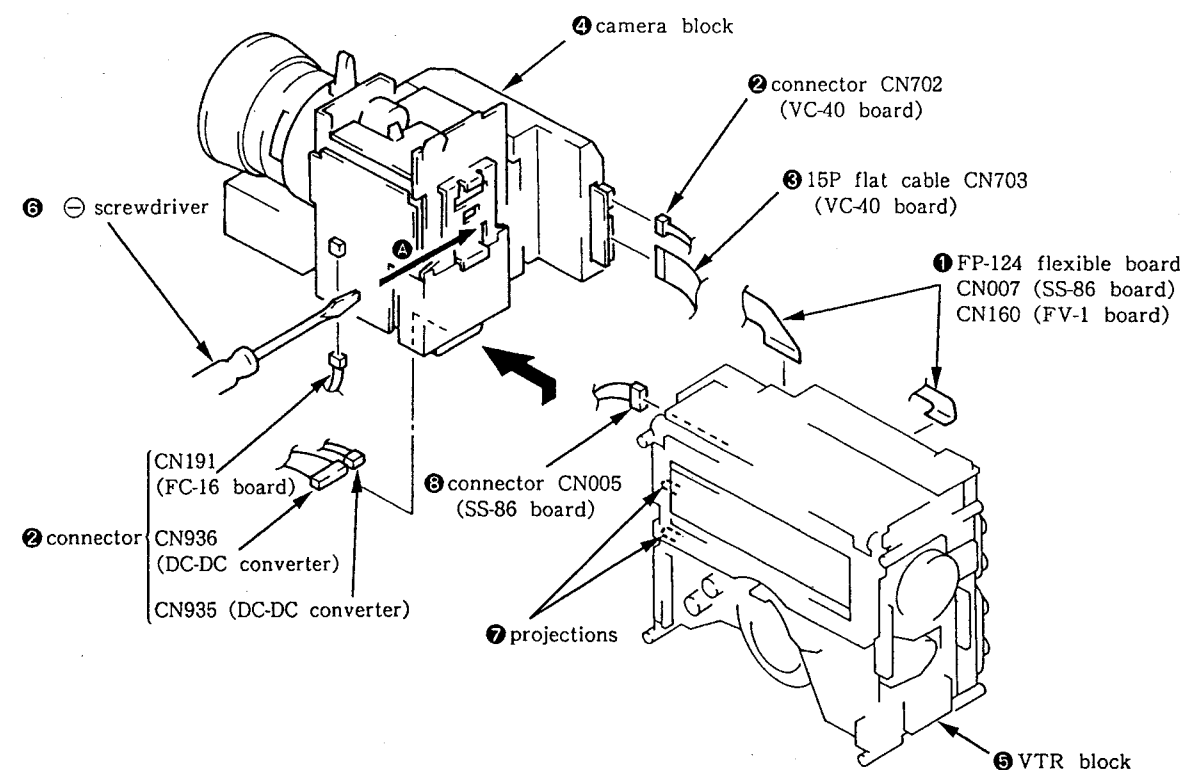
- 1) Remove two screws ① and detach the cassette lid ②.
- 2) Take off the cabinet (right) ③.
- 3) Remove two screws ④ and detach the lens cover ⑤.



2-4. SEPARATING THE CAMERA AND VTR BLOCKS

- 1) Remove the FP-124 flexible board ①.
- 2) Disconnect the four connectors ② and the 15P flat cable ③.

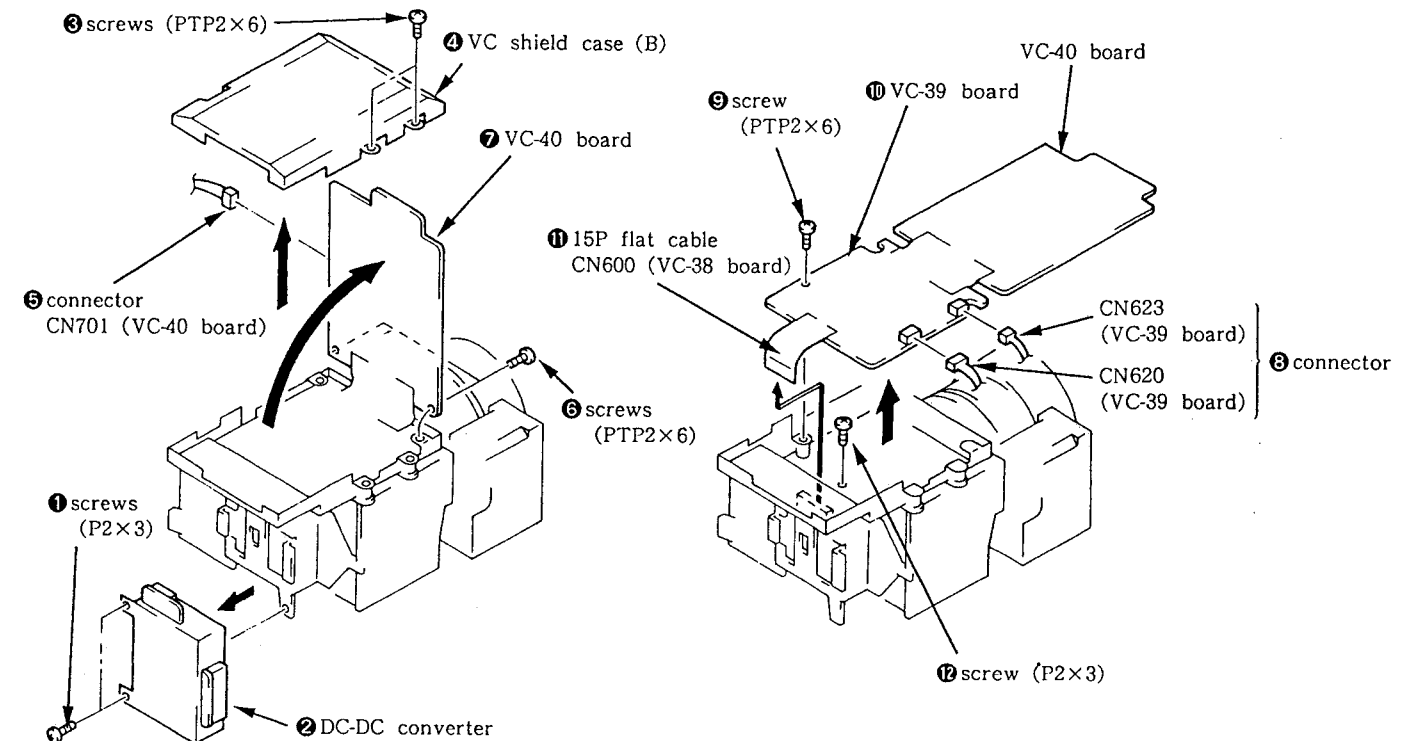
- 3) Insert a flat-bladed screwdriver ⑥ between the camera block ④ and VTR block ⑤ (as shown by arrow A) to separate two projections ⑦. Then slightly lift and remove the camera block ④.
- 4) Unplug a connector ⑧.



2-5. REMOVING THE VC-38 (CCD IMAGER), VC-39, AND VC-40 BOARDS

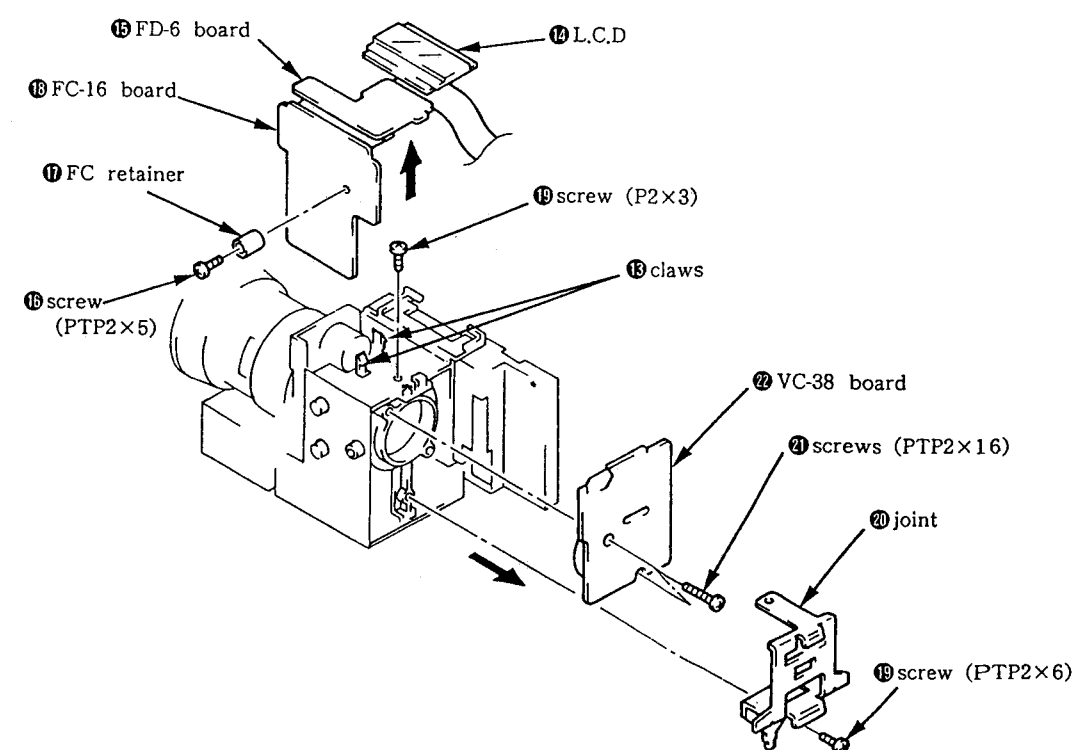
- 1) Remove two screws ① and take off the DC-DC converter ②.
- 2) Remove two screws ③ and detach the VC shield case (B) ④.
- 3) Unplug a connector ⑤.

- 4) Remove two screws ⑥ and open the VC-40 board ⑦.
- 5) Unplug two connectors ⑧.
- 6) Remove a screw ⑨ and take off the VC-39 board ⑩.
- 7) Disconnect the 15P flat cable ⑪.
- 8) Remove a screw ⑫.



- 9) Release two claws ⑬, and remove the LCD ⑭ and FD-6 board ⑮.
- 10) Remove a screw ⑯, and take off the FC retainer ⑰ and FC-16 board ⑱.

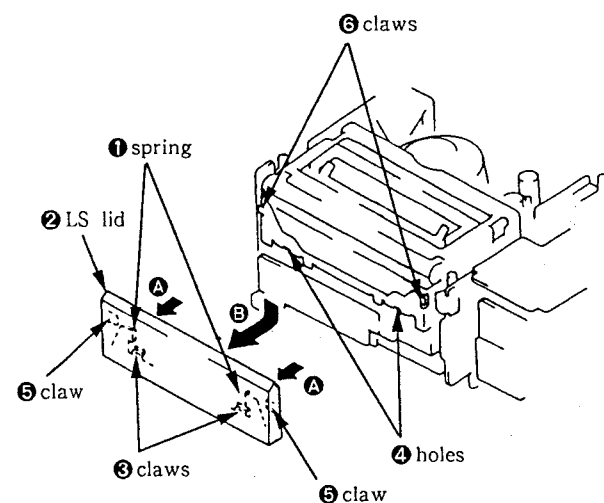
- 11) Remove two screws ⑲, and take off the joint ⑳.
- 12) Remove two screws ㉑, and take off the VC-38 board ㉒.



2-6. REMOVING THE LS LID

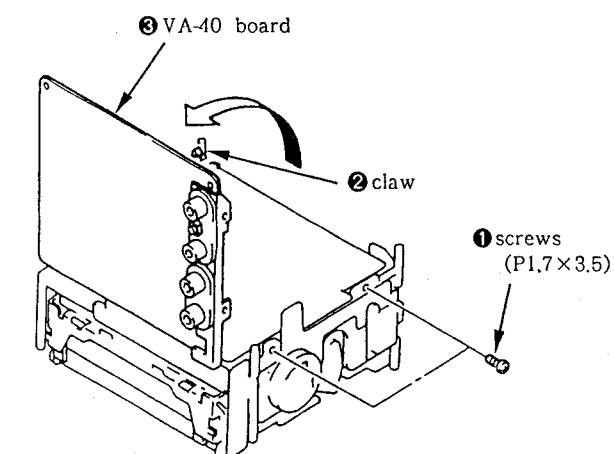
- 1) Insert a thin flat-bladed screwdriver into the spring ① at 2 points and push it in the direction of arrow A, and then remove the LS lid ② in the direction of arrow B.

Note: To re-assemble, locate the two claws ③ at the back of each hole ④ at 2 points, and also the two claws ⑤ at the back of each claw ③ at 2 locations.



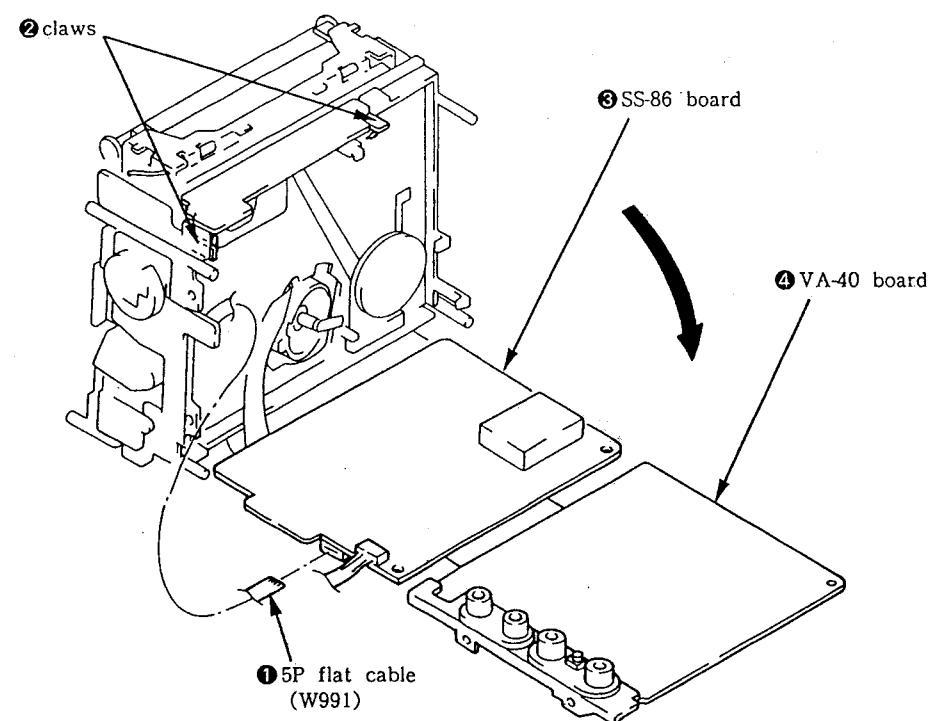
2-7. OPENING THE VA-40 BOARD

- 1) Remove two screws ①.
- 2) Release single claw ②.
- 3) Open the VA-40 board ③ as shown by the arrow.



2-8. OPENING THE SS-86 BOARD

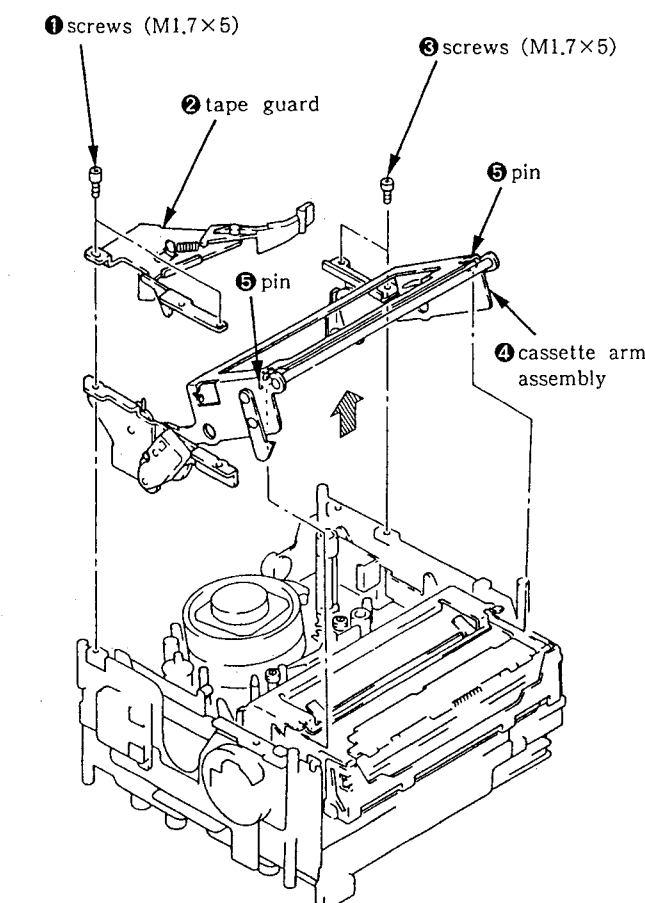
- 1) Disconnect the 5P flat cable ①.
- 2) Release the claw ② at two points, and open the SS-86 and VA-40 boards ③ and ④ as shown by the arrow.



2-9. REMOVING THE CASSETTE ARM

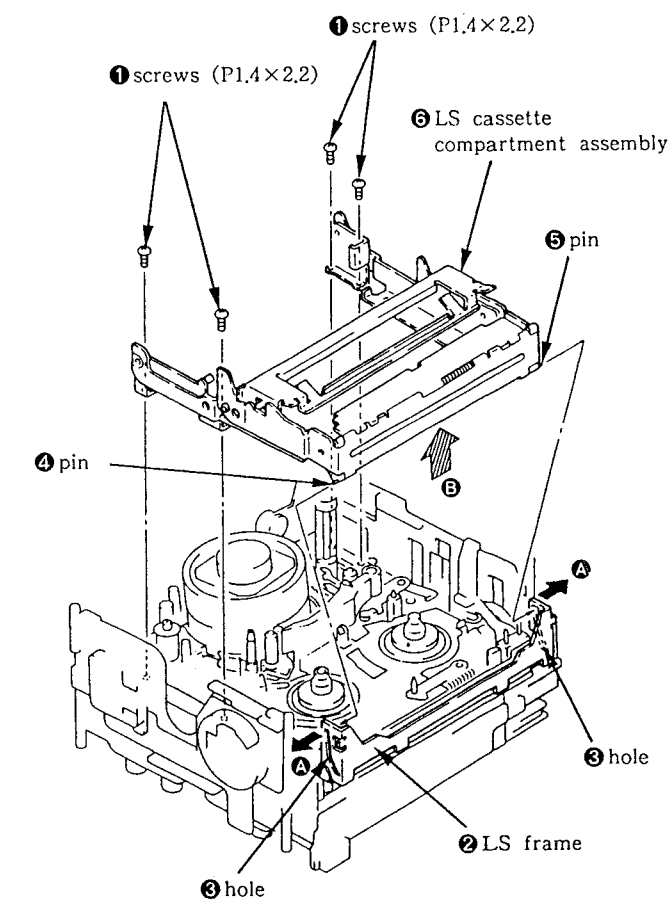
- 1) Remove two screws ① and take off the tape guard ②.
- 2) Remove two screws ③ and take off the cassette arm assembly ④ in the direction of the arrow.

Note: To re-assemble the cassette arm assembly ④, adjust it so that pin ⑤ can be inserted in the correct position.



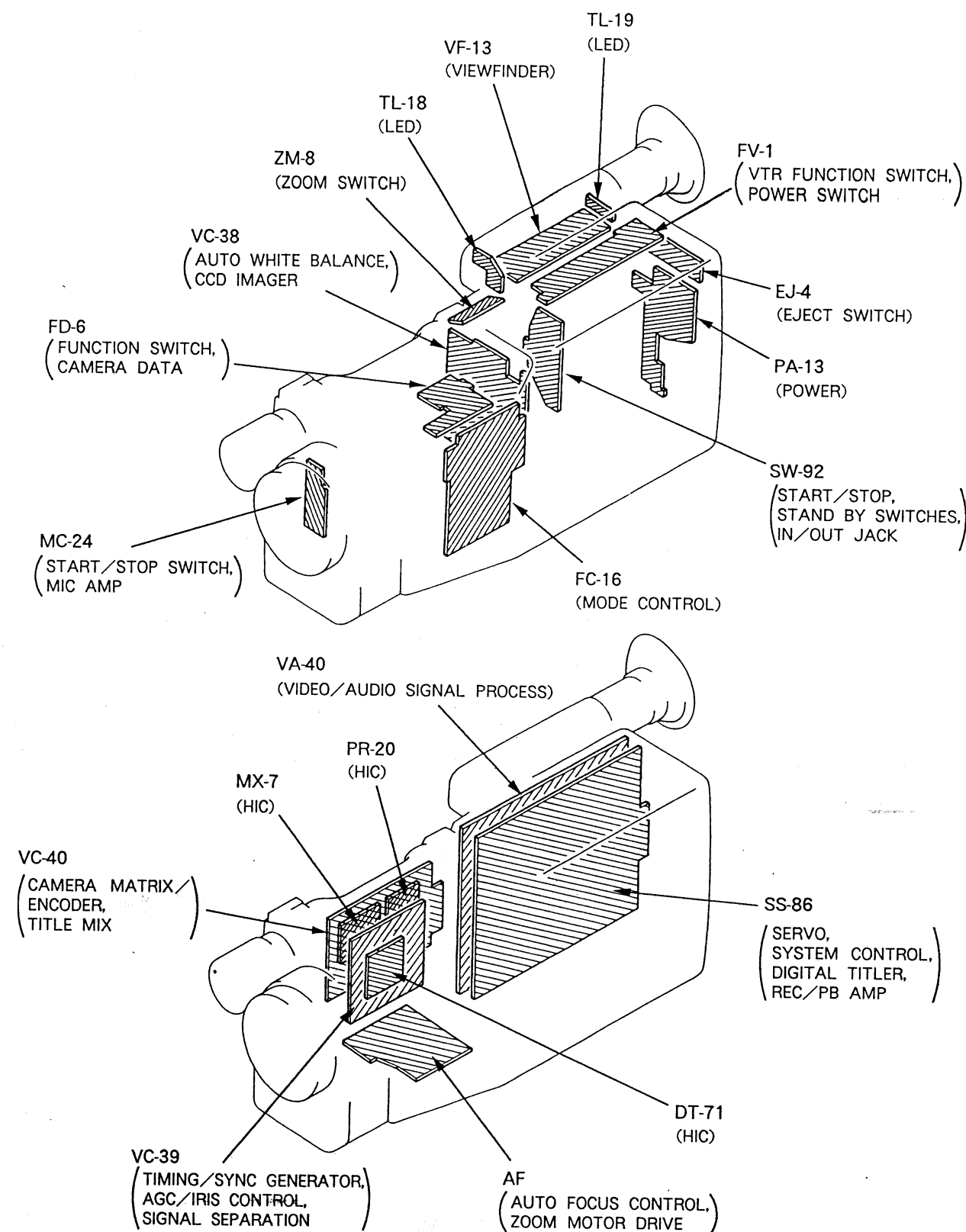
2-10. REMOVING LS CASSETTE COMPARTMENT ASSEMBLY

- 1) Remove four screws ①.
- 2) Press the recessed parts, or hole ③ on LS frame ② at 2 points as shown by the arrow A in order to disconnect pins ④ and ⑤. (First disconnect pin ④ since it is shorter than pin ⑤.)
- 3) Remove the LS cassette compartment assembly ⑥ as shown by the arrow B.



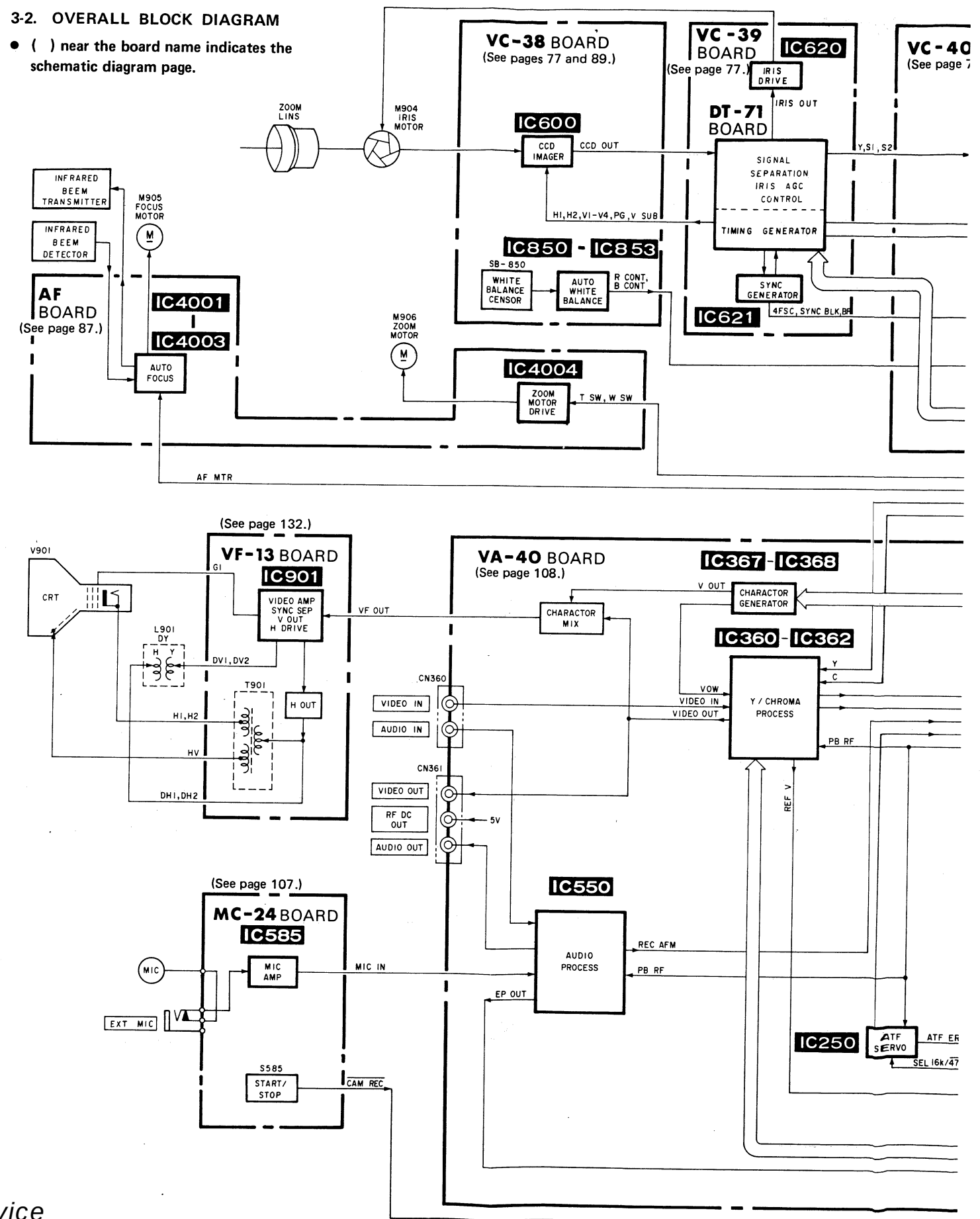
SECTION 3 DIAGRAMS

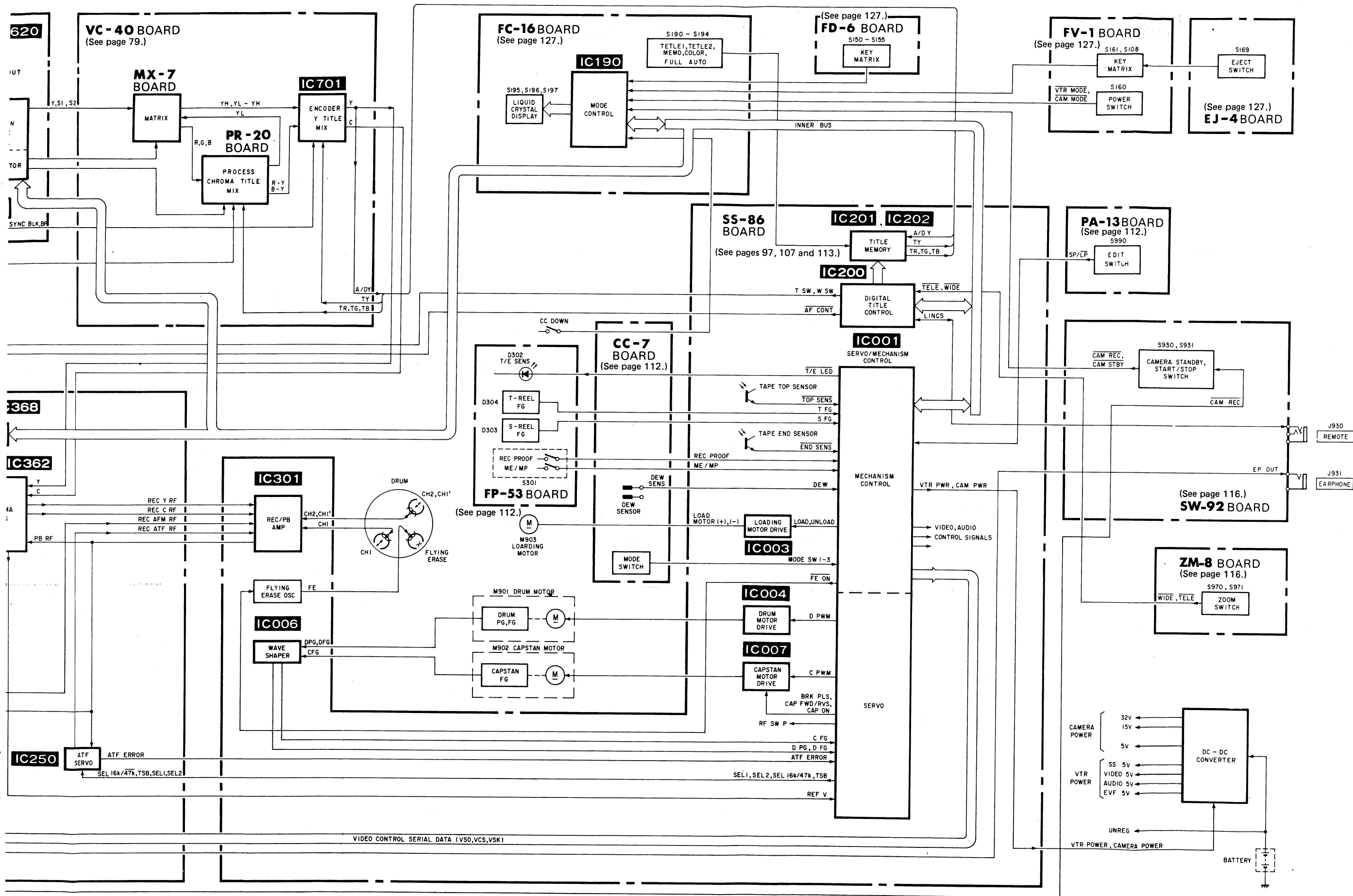
3-1. CIRCUIT BOARDS LOCATION



3-2. OVERALL BLOCK DIAGRAM

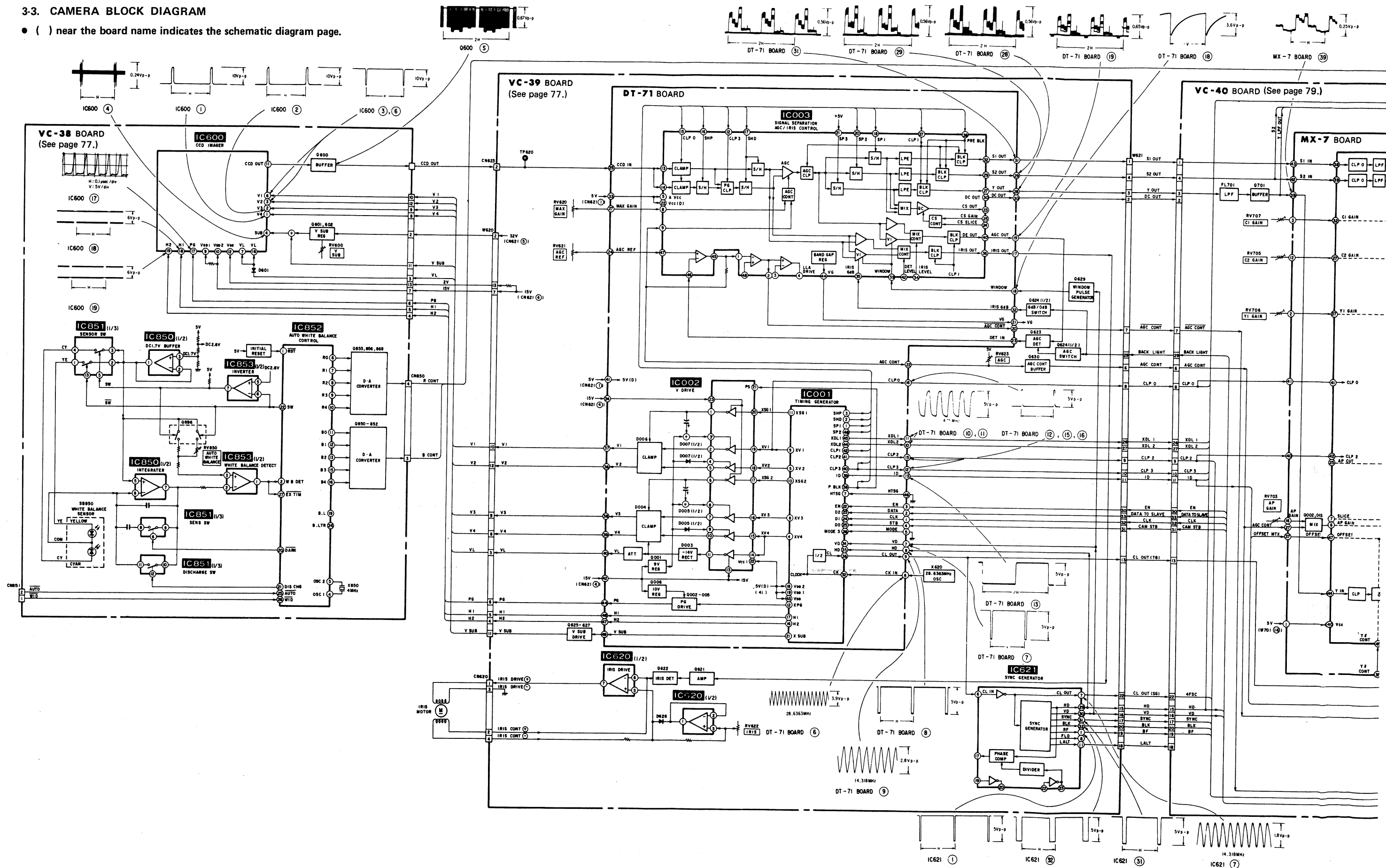
• () near the board name indicates the schematic diagram page.

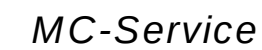


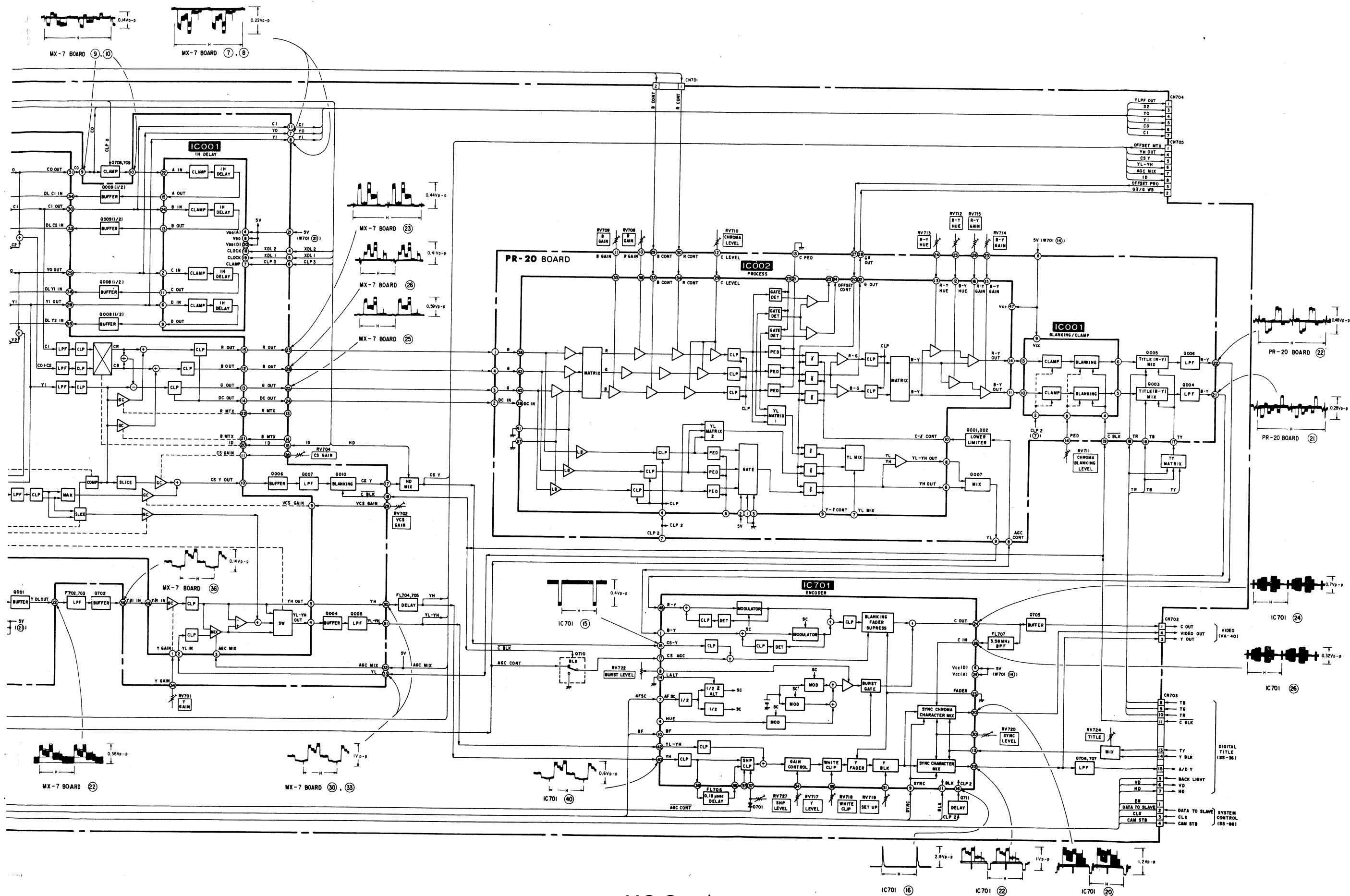


3-3. CAMERA BLOCK DIAGRAM

• () near the board name indicates the schematic diagram page.



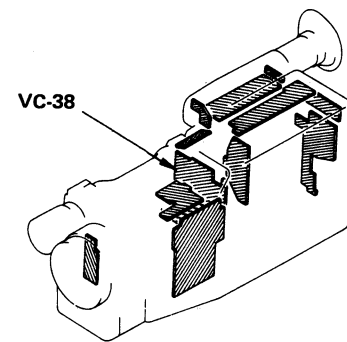
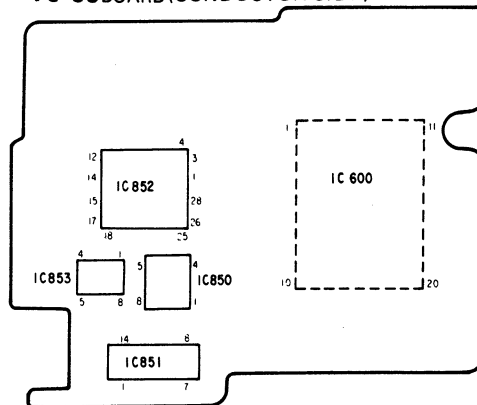




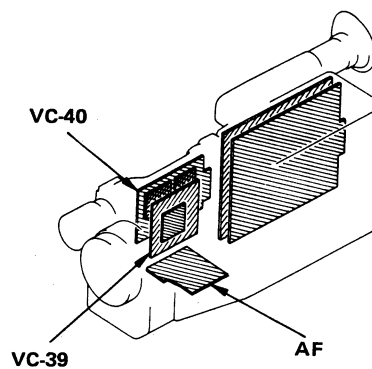
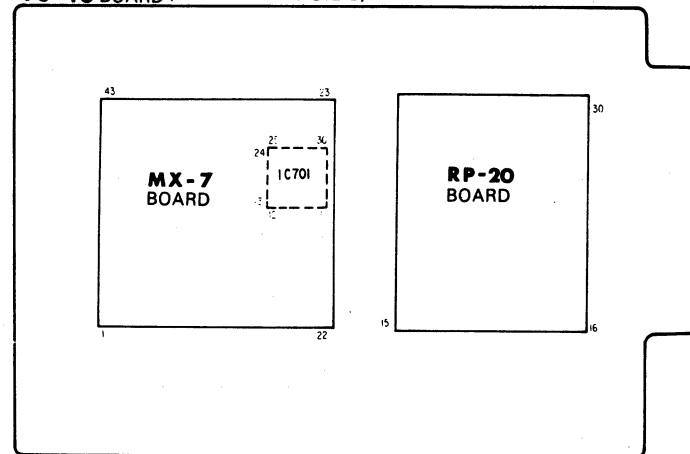
3-4. AUTO FOCUS BLOCK DIAGRAM

- () near the board name indicates the schematic diagram page.

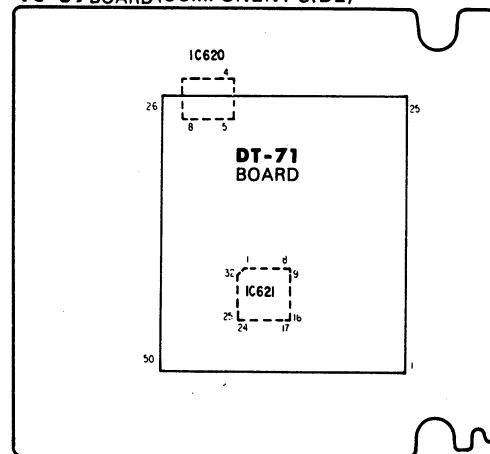
VC-38 BOARD (CONDUCTOR SIDE)



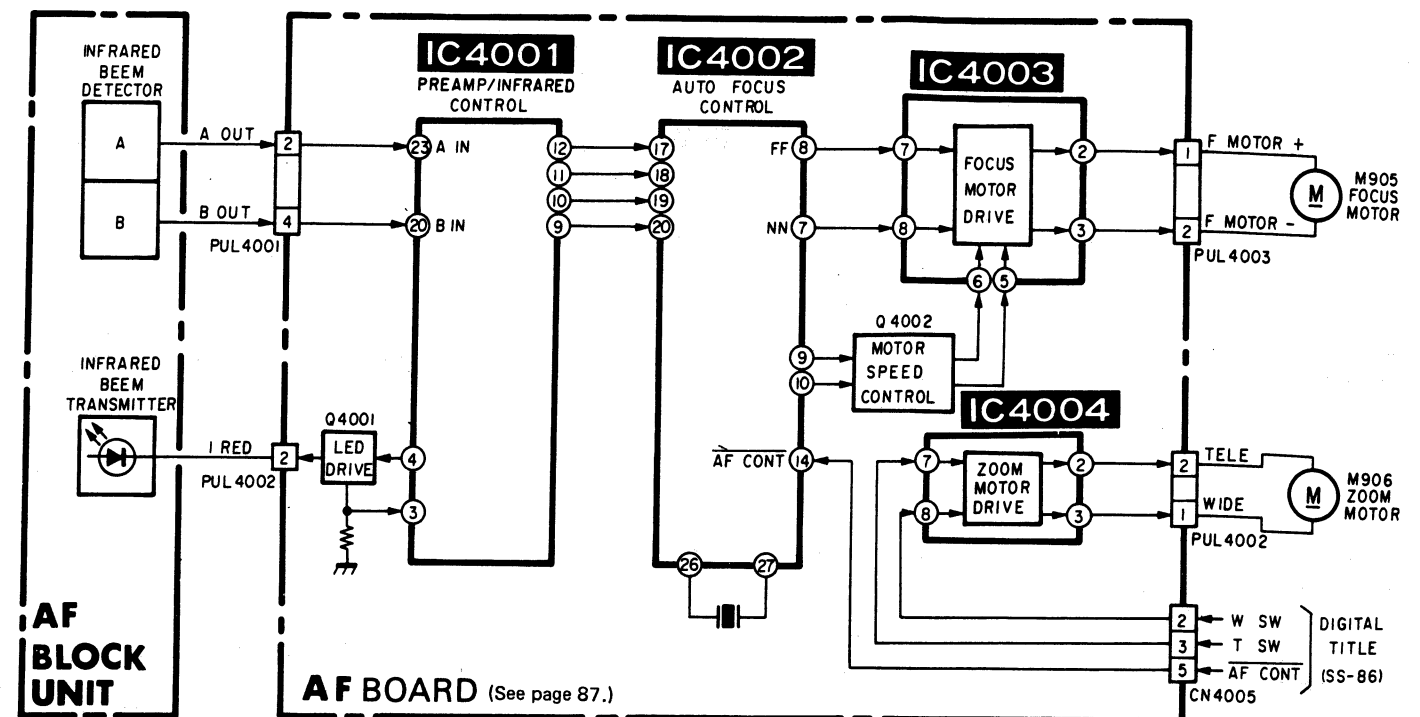
VC-40 BOARD (COMPONENT SIDE)



VC-39 BOARD (COMPONENT SIDE)

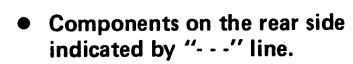


- Components on the rear side indicated by "..." line.

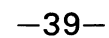


MC-Service

- () near the board name indicates the schematic diagram page.



- () near the board name indicates the schematic diagram page.



- () near the board name indicates the schematic diagram page.

Diagram of the back of a circuit board showing component locations and dimensions. The board is rectangular with rounded corners. Four mounting holes are located at the top edge. The components and their dimensions are as follows:

- IC250**: A square component with dimensions 11 (width), 12 (height), 44 (total width), and 34 (total height). Pin locations are marked at 22, 23, 33, and 34.
- IC368**: A small square component with dimensions 16 (width) and 9 (height). Pin locations are marked at 16 and 9.
- IC367**: A small square component with dimensions 16 (width) and 9 (height). Pin locations are marked at 16 and 9.
- IC369**: A vertical rectangular component with dimensions 11 (width) and 9 (height). Pin locations are marked at 11 and 9.
- IC362**: A small square component with dimensions 11 (width) and 9 (height). Pin locations are marked at 32, 24, 17, and 16.
- IC361**: A horizontal rectangular component with dimensions 50 (width) and 16 (height). Pin locations are marked at 50 and 16.
- IC550**: A large square component with dimensions 16 (width) and 17 (height). Pin locations are marked at 16, 17, and 32.
- IC360**: A large rectangular component with dimensions 51 (width), 33 (height), 52 (total width), and 32 (total height). Pin locations are marked at 51, 52, 33, 32, 20, 13, 1, and 64.
- IC366**: A small square component with dimensions 11 (width) and 9 (height). Pin locations are marked at 11 and 9.

Diagram illustrating the components of the Sony CCD camera head assembly, showing the exploded view of the main body and the internal assembly.

Main Body Components:

- VF-13 (VIEWFINDER)
- TL-19 (LED)
- FV-1 (VTR FUNCTION SWITCH, POWER SWITCH)
- EJ-4 (EJECT SWITCH)
- PA-13 (POWER)
- SW-92 (START/STOP, STAND BY SWITCHES, IN/OUT JACK)
- FC-16 (MODE CONTROL)
- VA-40 (VIDEO/AUDIO SIGNAL PROCESS)
- MC-24 (START/STOP SWITCH, MIC AMP)
- FD-6 (FUNCTION SWITCH, CAMERA DATA)
- VC-38 (AUTO WHITE BALANCE, CCD IMAGER)
- ZM-8 (ZOOM SWITCH)
- TL-18 (LED)

Internal Assembly Components:

- VC-40 (CAMERA MATRIX, ENCODER, TITLE MIX)
- MX-7 (HIC)
- PR-20 (HIC)
- SS-86 (SERVO, SYSTEM CONTROL, DIGITAL TITLER, REC/PB AMP)
- DT-71 (HIC)
- AF (AUTO FOCUS CONTROL, ZOOM MOTOR DRIVE)
- VC-39 (TIMING/SYNC GENERATOR, AGC/iris CONTROL, SIGNAL SEPARATION)

FD - 6 BOARD
(See page 127.)

KEY MATRIX

S153 COUNTER RESET	S150 ZERO MEMORY	CNISO 3 4 5 1 2
S154 EDIT CUE	S151 EDIT REV	
S155 TIME	S152 DATE	

K IN 4 K IN 3 K OUT 0 K OUT 2 K OUT 3

FU- 1 BOARD (See page 127.)

KEY MATRIX

SERVICE MODE				
S167 REC	S164 PLAY			
S168 REW	S165 FF	S162 FRAME	S161 SLOW	
	S166 STOP	S163 PAUSE		

Connections from the matrix to the K OUT lines:

- K OUT 3: Connected to the top-right corner of the matrix.
- K OUT 2: Connected to the top-right corner of the matrix.
- K OUT 1: Connected to the top-right corner of the matrix.
- K OUT 0: Connected to the bottom-right corner of the matrix.

Connections from the KIN lines to the matrix:

- KIN 0: Connected to the bottom-left corner of the matrix.
- KIN 1: Connected to the bottom-left corner of the matrix.
- KIN 2: Connected to the bottom-left corner of the matrix.
- KIN 3: Connected to the bottom-left corner of the matrix.

Additional connections:

- A switch labeled **CAMERA** is connected to the K OUT 0 line, with positions for **OFF**, **VTR**, and a common connection to ground.
- A switch labeled **S160 POWER** is connected to the K OUT 0 line, with positions for **OFF**, **VTR**, and a common connection to ground.

EJ-4 BOARD
(See page 127.)

S169
EJECT

1 K IN O
2 K OUT Q

W162 W16

SS-86 BOARD
(See page 107.)

IC301

DRUM VIDEO HEAD

CH 1 → CN003 → CH 1 (pin 9) → REC/PB AMP

CH 2 → CH 2 (pin 6) → REC/PB AMP

CH 1' → CH 1' (pin 3) → REC/PB AMP

REC/PB AMP → (pin 1) → FF

REC/PB AMP → (pin 3) → FF

VA-40 BOARD (SERVO)
(See page 108.)

Diagram illustrating the signal flow for the VA-40 BOARD (SERVO):

- Top Path:** PB RF input → 0250 BUFFER → LPF
- Bottom Path:** REC AFT RF input → 0251, 252 LPF

Labels for the blocks and inputs include: 0250, BUFFER, LPF, PB RF, PR RF (VIDEO, AUDIO), REC AFT RF, 0251, 252, and LPF.

FC-16 BOARD
(SYSTEM CONTROL)
(See page 127.)

IC190 MODE CONTROL

IC191

PA-13 BOARD
(See page 112.)

SW-92 BOARD
(See page 116.)

MC-24 BOARD
(See page 107.)

The diagram illustrates the system control circuitry. Key components include:

- IC190 MODE CONTROL:** Receives signals from CAM STB, LINC'S PWR, CC DOWN, DATA TO SLVE, DATA TO MSTR, CLK, SLVE RESET, CG STB, and REF V. It outputs signals to K OUT 0 through K OUT 3, K IN 3, K IN 4, K IN 2, K IN 1, K IN 0, VTR MODE, and CAM MODE.
- IC191:** Receives signals from EVER 5V (W190), SHUTTER, and K IN 3. It outputs signals to K IN 2, K IN 1, K IN 0, VTR MODE, and CAM MODE.
- LIQUID CRYSTAL DISPLAY:** Receives signals from COM 0 and COM 3.
- PA-13 BOARD:** Includes a LITHIUM BATTERY and a LITHIUM BATTERY DETECT circuit.
- SW-92 BOARD:** Includes a REMOTE control input and a START/STOP button.
- MC-24 BOARD:** Includes a START/STOP button.

Other components shown include S190 (FULL AUTO switch), S196 (BACK LIGHT), S195 (AUTO FOCUS), S197 (SHUTTER), Q192 (LITHIUM BATTERY DETECT), Q160,161,163,167,168 (INITIAL RESET), Q190 (DISPLAY SWITCH), Q191 (SYSTEM CLOCK FREQUENCY SWITCH), Q166 (EVER 5V DETECT), and various resistors and capacitors.

The diagram shows the SW-92 BOARD with several input lines. A horizontal line labeled 'C49' runs across the top. Below it, a vertical line is labeled 'LINCS DC'. To the left, a switch labeled 'S930' can be moved between 'STANDBY' and 'LOCK' positions. To the right, a switch labeled 'S931' is labeled 'START/STOP'. Wires connect these components to the board's internal circuitry, with labels '7', '2', and '1' indicating specific connection points or components.

(See page 107.)
MC-24 BOARD

The schematic diagram illustrates the internal circuitry of the IC250 ATF servo. Key components include:

- Inputs:** GCA (General Control Address) and a 5.9MHz oscillator (OSC) connected to pins 14 and 15.
- Modulation and Filtering:** A balanced modulator feeds into two parallel paths, each containing a 3JH BPF and a 1JH BPF, followed by amplifiers.
- Signal Processing:** The amplified signals pass through peak detectors and are summed at a junction before entering a sampling hold stage.
- Control and Timing:** A 58-40 counter provides timing signals to various parts of the circuit, including the sampling hold and the final output stage.
- Output Stage:** The signal is processed by a Schmitt trigger, an amplifier, and another Schmitt trigger to produce the final output.
- IC250 ATF Servo:** The integrated circuit is shown at the top right, with pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.



3-8. MECHANISM CONTROLLER (μPD78112-GF)

This is the 8-bit, single chip microprocessor having the following characteristics.

- μCOM-78K/I
- high speed instruction execution
Instruction cycle : 333ns/12MHz
- On-chip memory mapping for peripheral hardware (special function register)
- On-chip high function interrupt controller
Two kinds of processing forms (vector interrupt function/macro service function)
- On-chip high precision A/D converter
8 bit precision : 8 analog inputs
One analog input conversion time : 26.7μs/12MHz
- On-chip hardware suitable for servo control of VTR, etc. (servo control unit)
16 bit free running counter + capture register x 2
special pulse output control function
12 bit precision PWM output x 2

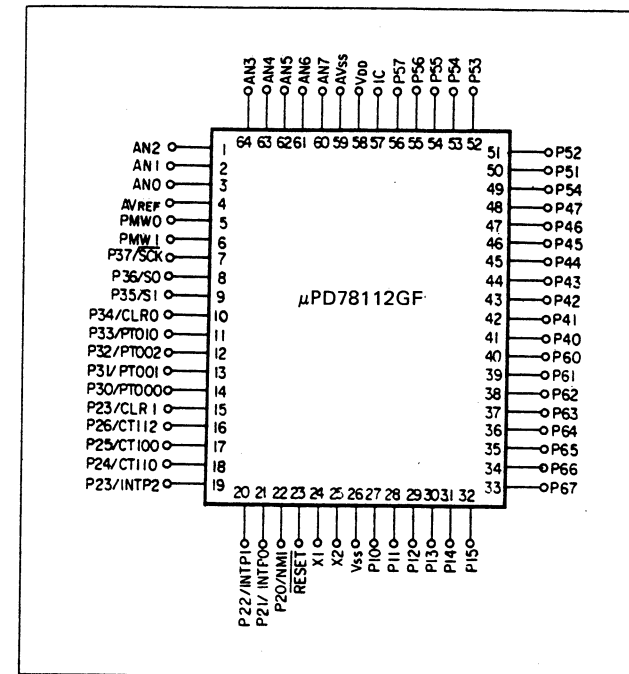


Fig. 1. μPD78112 pin assignment diagram

PIN NO	Signal name	I / O	Signal status	Function
1	DEW	I	Analog input	DEW detecting pin. When DEW (condensation) occurs, more than 430mV generates.
2	ATF ERR	I	Analog input	ATF ERROR input pin.
3	SWP DLY	I	Analog input	RF SWP adjustment input pin.
4	VA REF	O		A/D converter reference voltage input pin.
5	D PWM	O	PWM output	Drum motor drive signal
6	C PWM	O	PWM output	Capstan motor drive signal
7	CLK	I		Serial communication clock input.
8	DATA TO MSTR	O		Data output pin for the data to be sent to mode control CPU.
9	DATA TO SLVE	I		Data input pin for the data coming from the mode control CPU.
10	D PG	I		Drum PG input pin.
11	SP/LP	O	Logic status	Playback mode output pin. SP="H", LP="L"
12	JOG	O	Logic status	Video circuit normal/variable speed playback select signal. "H" during STILL, SLOW, FRAM, CUE/REV, FRSEARCH, REC REV, EDIT CUE, EDIT REV.
13	JOG VD	O	Logic status	False VD output inserted into video signal during variable speed playback mode.
14	RF SWP	O		RF SWP output pin.
15	REF V	I		REF V input pin.
16	FULL AUTO	I	Logic status	"L" during AUTO LOCK
17	D FG	I		Drum FG input.
18	C FG	I		Capstan FG input.
19	END SENS	I	Logic status	END-side END sensor input.

Table 1 (1)

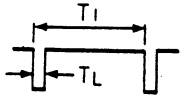
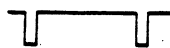
PIN NO	Signal name	I / O	Signal status	Functions												
20	CLOG	I	Logic status	Head clogging detect input.												
21	TOP SENS	I	Logic status	TOP-side TOP sensor input.												
22	CS	I	Logic status	Input signal to start data communication. Starting at fall-down edge.												
23	SLVE RESET	I	Logic status	RESET input. "L" RESET.												
24	X'TAL IN	I	12MHz 	To be used for system clock. X'tal should be connected.												
25	X'TAL OUT	O		To be used for system clock. X'tal should be connected.												
26	V _{ss}			GND pin												
27	VA PB MODE	O	Logic status	Video, audio REC/PB select signal. "H" during PB.												
28	V MUTE	O	Logic status	Video, muting signal. "H" during muting.												
29	A MUTE	O	Logic status	Audio, muting signal. "H" during muting.												
30	VIDEO CS	I		Input signal to start video data communication.												
31	T/E LED	O		Tape top/end detecting LED ON/OFF. Reel rotation detecting LED ON/OFF. <table border="1"><thead><tr><th>mode</th><th>REC/PB</th><th>CUE/REV</th><th>FF/REW</th></tr></thead><tbody><tr><td>T_I</td><td>100</td><td>14</td><td>2</td></tr><tr><td>T_L</td><td>1</td><td>1</td><td>1</td></tr></tbody></table> (unit in msec)	mode	REC/PB	CUE/REV	FF/REW	T _I	100	14	2	T _L	1	1	1
mode	REC/PB	CUE/REV	FF/REW													
T _I	100	14	2													
T _L	1	1	1													
32	CG WIND	O	"H"=MIX REC "L"=NOT	Selection signal whether character generator output will be recorded or will not be recorded.												
33	CAP ON	O	Logic status	Capstan motor ON/OFF signal. "H" level means capstan motor ON.												
34	ATF LOCK	I	Logic status	"L" when PB mode ATF phase servo is normally phase-locked.												
35	VTR Power	O	Logic status	DC-DC converter ON/OFF signal.												
36	CAM Power	O	Logic status		<table border="1"><thead><tr><th>mode</th><th>VTR Power</th><th>CAM Power</th></tr></thead><tbody><tr><td>VTR</td><td>"H"</td><td>"L"</td></tr><tr><td>OFF</td><td>"L"</td><td>"L"</td></tr><tr><td>CAM</td><td>"H"</td><td>"H"</td></tr></tbody></table>	mode	VTR Power	CAM Power	VTR	"H"	"L"	OFF	"L"	"L"	CAM	"H"
mode	VTR Power	CAM Power														
VTR	"H"	"L"														
OFF	"L"	"L"														
CAM	"H"	"H"														
37	VIDEO CLK	I		Clock for video serial data communication.												
38	TS B	O		ATF LOCK sampling hold signal. "L" during sampling mode. "H" during hold mode.												
39	CAP BRK	O	Logic status	This is the signal that applies full voltage to capstan motor.												
40	CAP FWD/RVS	O	Logic status	Capstan motor rotating direction select signal. "H" during normal direction (FWD) rotation.												
41	LOAD	O	Logic status	Threading motor control signal.												
42	UNLOAD	O	Logic status		<table border="1"><thead><tr><th>Operation Signal name</th><th>LOAD</th><th>UNLOAD</th><th>BRAKE</th></tr></thead><tbody><tr><td>LOAD</td><td>H</td><td>L</td><td>H</td></tr><tr><td>UNLOAD</td><td>L</td><td>H</td><td>H</td></tr></tbody></table>	Operation Signal name	LOAD	UNLOAD	BRAKE	LOAD	H	L	H	UNLOAD	L	H
Operation Signal name	LOAD	UNLOAD	BRAKE													
LOAD	H	L	H													
UNLOAD	L	H	H													
43	RP PB MODE	O	Logic status	REC/PB amplifier REC/PB select signal. "H" during PB.												
44	FE ON	O	Logic status	Flying erase oscillation ON/OFF signal, "L" during oscillation.												

Table 1 (2)

—OP52
—OP51
—OP54
—OP47
—OP45
—OP44
—OP43
—OP42
—OP41
—OP40
—OP60
—OP61
—OP62
—OP63
—OP64
—OP65
—OP66
—OP67

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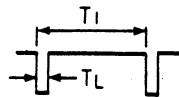
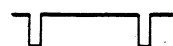
PIN NO	Signal name	I / O	Signal status	Functions												
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21	TOP SENS	I	Logic status	TOP-side TOP sensor input.												
22	CS	I	Logic status	Input signal to start data communication. Starting at fall-down edge.												
23	SLVE RESET	I	Logic status	RESET input. "L" RESET.												
24	X'TAL IN	I	12MHz 	To be used for system clock. X'tal should be connected.												
25	X'TAL OUT	O		To be used for system clock. X'tal should be connected.												
26	V _{ss}			GND pin												
27	VA PB MODE	O	Logic status	Video, audio REC/PB select signal. "H" during PB.												
28	V MUTE	O	Logic status	Video, muting signal. "H" during muting.												
29	A MUTE	O	Logic status	Audio, muting signal. "H" during muting.												
30	VIDEO CS	I		Input signal to start video data communication.												
31	T/E LED	O		Tape top/end detecting LED ON/OFF. Reel rotation detecting LED ON/OFF. <table><tr><th>mode</th><th>REC/PB</th><th>CUE/REV</th><th>FF/REW</th></tr><tr><td>T₁</td><td>100</td><td>14</td><td>2</td></tr><tr><td>T_L</td><td>1</td><td>1</td><td>1</td></tr></table> (unit in msec)	mode	REC/PB	CUE/REV	FF/REW	T ₁	100	14	2	T _L	1	1	1
mode	REC/PB	CUE/REV	FF/REW													
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32	CG WIND	O	"H" = MIX REC "L" = NOT	Selection signal whether character generator output will be recorded or will not be recorded.												
33	CAP ON	O	Logic status	Capstan motor ON/OFF signal. "H" level means capstan motor ON.												
34	ATF LOCK	I	Logic status	"L" when PB mode ATF phase servo is normally phase-locked.												
35	VTR Power	O	Logic status	DC-DC converter ON/OFF signal. <table><tr><th>mode</th><th>VTR Power</th><th>CAM Power</th></tr><tr><td>VTR</td><td>"H"</td><td>"L"</td></tr><tr><td>OFF</td><td>"L"</td><td>"L"</td></tr><tr><td>CAM</td><td>"H"</td><td>"H"</td></tr></table>	mode	VTR Power	CAM Power	VTR	"H"	"L"	OFF	"L"	"L"	CAM	"H"	"H"
mode	VTR Power	CAM Power														
VTR	"H"	"L"														
OFF	"L"	"L"														
CAM	"H"	"H"														
36	CAM Power	O	Logic status													
37	VIDEO CLK	I		Clock for video serial data communication.												
38	TS B	O		ATF LOCK sampling hold signal. "L" during sampling mode. "H" during hold mode.												
39	CAP BRK	O	Logic status	This is the signal that applies full voltage to capstan motor.												
40	CAP FWD/RVS	O	Logic status	Capstan motor rotating direction select signal. "H" during normal direction (FWD) rotation.												
41	LOAD	O	Logic status	Threading motor control signal. <table><tr><th>Operation Signal name</th><th>LOAD</th><th>UNLOAD</th><th>BRAKE</th></tr><tr><td>LOAD</td><td>H</td><td>L</td><td>H</td></tr><tr><td>UNLOAD</td><td>L</td><td>H</td><td>H</td></tr></table>	Operation Signal name	LOAD	UNLOAD	BRAKE	LOAD	H	L	H	UNLOAD	L	H	H
Operation Signal name	LOAD	UNLOAD	BRAKE													
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42	UNLOAD	O	Logic status													
43	RP PB MODE	O	Logic status	REC/PB amplifier REC/PB select signal. "H" during PB.												
44	FE ON	O	Logic status	Flying erase oscillation ON/OFF signal, "L" during oscillation.												

Table 1 (2)

PIN NO	Signal name	I / O	Signal status	Functions															
45	SEL1	O	Logic status	ATF REF PILOT signal frequency control. <table><tr><td>ATF REF PILOT</td><td>f₁</td><td>f₂</td><td>f₃</td><td>f₄</td></tr><tr><td>SEL1</td><td>H</td><td>L</td><td>H</td><td>L</td></tr><tr><td>SEL2</td><td>H</td><td>H</td><td>L</td><td>L</td></tr></table>	ATF REF PILOT	f ₁	f ₂	f ₃	f ₄	SEL1	H	L	H	L	SEL2	H	H	L	L
ATF REF PILOT	f ₁	f ₂	f ₃		f ₄														
SEL1	H	L	H		L														
SEL2	H	H	L	L															
46	SEL2	O	Logic status																
47	SEL 16K/47K	O	Logic status	ATF BPF select signal. "L" when detecting ATF error in f1 and f3 tracks. "H" when detecting ATF error in f2 and f4 tracks.															
48	HCHG	O	Logic status	Head select signal. "H" = CH-1' "L" = CH-1.															
49	REC PROOF SW	I	Logic status	"H" when cassette's erroneous erasure preventing switch is set in the erasure prevention side.															
50	MSW1	I	Logic status	Mechanism mode switch input (three bit structure, mechanical position detection)															
51	MSW2	I	Logic status																
52	MSW3	I	Logic status																
53	VIDEO SO	O	Logic status	Data line for the data to be sent to CXA1201.															
54	EDIT	I		Input signal for EDIT selection. "H": OFF. "L": ON															
55	DRUM BRK	O	Logic status	Slow mode drum fH compensation drum brake signal.															
56	SLOW GAIN	O	Logic status	ATF ERROR's gain select signal.															
57	VPP			Fixed to power supply voltage.															
58	V _{DD}			Power supply pin.															
59	AV _{SS}			A/D converter's GND pin.															
60	STILL ADJ	I		Input signal for STILL noise position adjustment.															
61	JAP/USA	I	Analog input	Destination select SW input. More than 2.5V JAPAN. Less than 2.5V USA.															
62	BATT LVL	I	Analog input	BATTERY LEVEL input. This is input at approx.1/2.															
63	T REEL FG	I	Analog input	Take-up side REEL FG input. Used to detect reel rotation.															
64	S REEL FG	I	Analog input	Supply side REEL FG input. Used to detect reel rotation.															

Table 1 (3)

3-9. SYSTEM CONTROL – CAMERA BLOCK INTERFACE

Signal	I/O	Pin No.	Input/Output Level
AF ON	O	SS-86 board IC200 ⑤	“H” when auto focus in ON.
TELE IN	I	SS-86 board IC200 ③	“L” when zoom switch TELE is pressed.
WIDE IN	I	SS-86 board IC200 ④	“L” when zoom switch WIDE is pressed.
TALLY	O	SS-86 board IC200 ⑭	“L” when in CAMERA mode and REC mode.
CAM STB	O	FC-18 board IC190 ③	4V cycle “H” pulse. () Strobe signal for serial data transmission.
CLK	O	FC-18 board IC190 ⑦	2V cycle “L” Pulse series. () Serial data transmission clock.
DATA TO SLAVE	O	FC-18 board IC190 ⑥	2V cycle pulse series. () Serial data transmission.
TELE OUT	O	SS-86 board IC200 ⑦	“H” during the zoom motor is rotating TELE direction.
WIDE OUT	O	SS-86 board IC200 ⑧	“H” during the zoom motor is rotating WIDE direction.
BACK LIGHT	O	SS-86 board IC200 ⑥	“H” during Back Light is lit.

3-11. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	I/O	Pin No.	VTR MODE						
			STOP	FF	REW	FR SEARCH		PB	PIC CUI
						CUE	REVIEW		
ATF ERR	I	SS-86 board IC001 ②		* 1	* 1	* 2	* 2	* 2	* 2
SWP DLY * 3	I	SS-86 board IC001 ③							
D PWM	O	SS-86 board IC001 ⑤	L	* 4	* 4	* 4	* 4	* 4	* 4
C PWM	O	SS-86 board IC001 ⑥	L	* 5	* 5	* 5	* 5	* 5	* 5
D PG	I	SS-86 board IC001 ⑩	L	* 6	* 6	* 6	* 6	* 6	* 6
RF SWP	O	SS-86 board IC001 ⑭	H/L	* 7	* 7	* 7	* 7	* 7	* 7
REF V	I	SS-86 board IC001 ⑮	* 8	* 8	* 8	L	L	L	L
D FG	I	SS-86 board IC001 ⑰	H	* 9	* 9	* 9	* 9	* 9	* 9
C FG	I	SS-86 board IC001 ⑱	H/L	* 10	* 10	* 11	* 12	* 13	* 1
CAP ON	O	SS-86 board IC001 ⑳	L	H	H	H	H	H	H
ATF LOCK	I	SS-86 board IC001 ㉔		H	H	H	H	L	H
TS B	O	SS-86 board IC001 ㉘	H	H	H	H	H	* 15	H
CAP BRK	O	SS-86 board IC001 ㉙	L	L	L	L	L	L	L
CAP FWD/RVS	O	SS-86 board IC001 ㉚	H	H	L	H	L	H	H
SEL1	O	SS-86 board IC001 ㉜	L	L	L	* 18	* 19	* 15	* 1
SEL2	O	SS-86 board IC001 ㉝	L	L	L	* 18	* 19	* 15	* 1
SEL 16K/47K	O	SS-86 board IC001 ㉞	L	L	L	* 18	* 19	* 15	* 1
SLOW GAIN	O	SS-86 board IC001 ㉟	L	L	L	L	L	L	L

3-10. SYSTEM CONTROL – VIDEO, AUDIO BLOCK INTERFACE

Signal	I/O	Pin No.	VTR mode													CAMERA mode			
			STOP	FF	REW	FF SEARCH		PB	PICTUER SEARCH		PB·PAUSE	FRAME	SLOW	REC	REC. PAUSE	STAND-BY	EDIT CUE	EDIT REVIEW	REC
						CUE	REVIEW		CUE	REVIEW									
SP/LP	O	SS-86 board IC001 ⑪	H	H	H	* 1	* 1	* 2	* 1	* 1	* 1	* 1	* 1	H	H	H	H	H	H
JOG	O	SS-86 board IC001 ⑫	H	H	H	L	L	H	L	L	L	L	L	H	H	H	L	L	H
JOG VD	O	SS-86 board IC001 ⑬	L	L	L	* 3	* 3	L	* 3	* 3	* 3	* 3	* 3	L	L	L	* 3	* 3	L
VA SWP	O	SS-86 board IC001 ⑭	H/L	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4
REF V	O	SS-86 board IC001 ⑮	* 5	* 5	* 5	L	L	L	L	L	L	L	L	* 5	* 5	* 5	L	L	* 5
CLOG	I	SS-86 board IC001 ⑰	H	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	H			* 6	* 6	H
VA PB MODE	O	SS-86 board IC001 ㉔	L	L	L	H	H	H	H	H	H	H	H	L	L	L	H	H	L
V MUTE	O	SS-86 board IC001 ㉕	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
A MUTE	O	SS-86 board IC001 ㉖	L	L	L	H	H	L	H	H	H	H	H	L	L	L	H	H	L
CG WIND	O	SS-86 board IC001 ㉗	H	H	H	H	H	H	H	H	H	H	H	H	H	* 7	* 7	* 7	* 7
CAM PWR	O	SS-86 board IC001 ㉘	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H
RP PB MODE	O	SS-86 board IC001 ㉙	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	L
FE ON	O	SS-86 board IC001 ㉚	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	L
TAPE2/TAPE1	O	FP-53board S301	“L” when using MP type tape.													H	H	H	L
EDIT	O	PA-13 board S990	“L” when EDIT switch (PA-13 board S990) is turned ON.																
DATA TO SLAVE	O	FC-16 board IC190 ⑥	V cycle “L” pulse series (VTR mode)													“L” pulse series (CAMERA mode)			
CLK	O	FC-16 board IC190 ⑦	V cycle “L” pulse series (VTR mode)													“L” pulse series (CAMERA mode)			
CG STB	O	FC-16 board IC190 ②	L	L	L	L	L	L	L	L	L	L	L	L	L	* 8	* 8	* 8	* 8

- * 1 Outputs identification results is PB mode immediately preceding. SP mode “H” , LP mode “L” .
- * 2 Outputs identification results of playback tape recording mode (SP/LP). SP mode “H” , LP mode “L” .
- * 3 False VD signal (V cycle “H” pulse)
- * 4 30Hz 50% duty pulse. Synchronized to drum rotation.
- * 5 V cycle “L” pulse separated from line input video signal or camera video signal.
- * 6 “H” at tape no signal portion or dropout portion. Input for head clogging detection.

- * 7 V cycle pulse
- * 8 2V cycle pulse series.

3-11. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

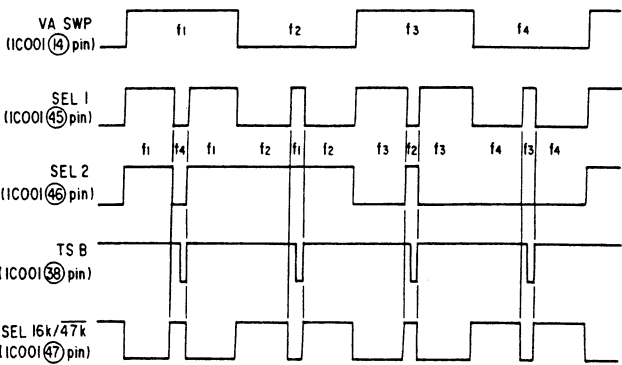
Signal	I/O	Pin No.	VTR MODE													CAMERA MODE			
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB•PAUSE	FRAME	SLOW	REC	REC. PAUSE	STAND-BY	EDIT CUE	EDIT REV	REC
						CUE	REVIEW		CUE	REVIEW									
ATF ERR	I	SS-86 board IC001 ②		* 1	* 1	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 1			* 2	* 2	* 1
SWP DLY * 3	I	SS-86 board IC001 ③																	
D PWM	O	SS-86 board IC001 ⑤	L	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4
C PWM	O	SS-86 board IC001 ⑥	L	* 5	* 5	* 5	* 5	* 5	* 5	* 5	L	* 5	* 5	* 5	L	L	* 5	* 5	* 5
D PG	I	SS-86 board IC001 ⑩	L	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6
RF SWP	O	SS-86 board IC001 ⑭	H/L	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7
REF V	I	SS-86 board IC001 ⑮	* 8	* 8	* 8	L	L	L	L	L	L	L	L	* 8	* 8	* 8	L	L	* 8
D FG	I	SS-86 board IC001 ⑰	H	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9
C FG	I	SS-86 board IC001 ⑱	H/L	* 10	* 10	* 11	* 12	* 13	* 11	* 12	H/L	* 14	* 14	* 13	H/L	H/L	* 13	* 13	* 13
CAP ON	O	SS-86 board IC001 ⑳	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
ATF LOCK	I	SS-86 board IC001 ㉔		H	H	H	H	L	H	H	H	H	H	H	H	H	L	L	H
TS B	O	SS-86 board IC001 ㉘	H	H	H	H	H	* 15	H	H	H	H	H	H	H	H	* 15	* 16	H
CAP BRK	O	SS-86 board IC001 ㉙	L	L	L	L	L	L	L	L	L	* 17	* 17	L	L	L	L	L	L
CAP FWD/RVS	O	SS-86 board IC001 ㉚	H	H	L	H	L	H	H	L	H	H	H	H	H	H	H	L	H
SEL1	O	SS-86 board IC001 ㉝	L	L	L	* 18	* 19	* 15	* 18	* 19	H	* 20	* 20	* 21	L	L	* 15	* 16	* 21
SEL2	O	SS-86 board IC001 ㉞	L	L	L	* 18	* 19	* 15	* 18	* 19	H/L	* 20	* 20	* 21	H	H	* 15	* 16	* 21
SEL 16K/47K	O	SS-86 board IC001 ㉟	L	L	L	* 18	* 19	* 15	* 18	* 19	L	* 20	* 20	L	L	L	* 15	* 16	L
SLOW GAIN	O	SS-86 board IC001 ㉡	L	L	L	L	L	L	L	L	H	H	H	L	L	L	L	L	L

VTR mode									CAMERA mode			
CH REVIEW	PB	PICTUER SEARCH		PB•PAUSE	FRAME	SLOW	REC	REC. PAUSE	STAND-BY	EDIT CUE	EDIT REVIEW	REC
		CUE	REVIEW									
* 1	* 2	* 1	* 1	* 1	* 1	* 1	H	H	H	H	H	H
L	H	L	L	L	L	L	H	H	H	L	L	H
* 3	L	* 3	* 3	* 3	* 3	* 3	L	L	L	* 3	* 3	L
* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4
L	L	L	L	L	L	L	* 5	* 5	* 5	L	L	* 5
* 6	* 6	* 6	* 6	* 6	* 6	* 6	H			* 6	* 6	H
H	H	H	H	H	H	H	L	L	L	H	H	L
L	L	L	L	L	L	L	L	L	L	L	L	L
H	L	H	H	H	H	H	L	L	L	H	H	L
H	H	H	H	H	H	H	H	H	* 7	* 7	* 7	* 7
L	L	L	L	L	L	L	L	L	H	H	H	H
H	H	H	H	H	H	H	L	H	H	H	H	L
H	H	H	H	H	H	H	L	H	H	H	H	L
turned ON.									"L" pulse series (CAMERA mode)			
									"L" pulse series (CAMERA mode)			
L	L	L	L	L	L	L	L	L	* 8	* 8	* 8	* 8

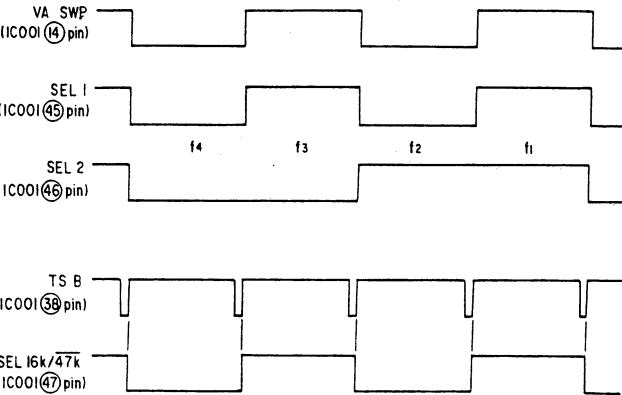
- * 7 V cycle pulse
- * 8 2V cycle pulse series.

- * 1 Fixed voltage approx. 2V DC.
- * 2 ATF error voltage
- * 3 DC voltage set by RV002 is input.
- * 4 53μsec cycle PWM wave. Duty ratio changes according to drum error signal.
- * 5 53μsec cycle PWM wave. Duty ratio changes according to capstan error signal.
- * 6 V cycle "H" pulse ()
- * 7 30Hz 50% duty pulse (). Synchronized to drum rotation.
- * 8 V cycle "L" pulse separated from line input video signal or camera video signal.
- * 9 720Hz pulse
- * 10 Approx. 16500Hz pulse
- * 11 Approx. 5900Hz pulse (SP mode)
- * 12 Approx. 5600Hz pulse (SP mode)
- * 13 Approx. 826Hz pulse (SP mode)
- * 14 Pulse input during step-by-step
- * 15 Refer to Timing Chart 1
- * 16 Refer to Timing Chart 2
- * 17 "H" pulse output during step-by-step
- * 18 Refer to Timing Chart 3
- * 19 Refer to Timing Chart 4
- * 20 Pulse output during step-by-step
- * 21 Refer to Timing Chart 5

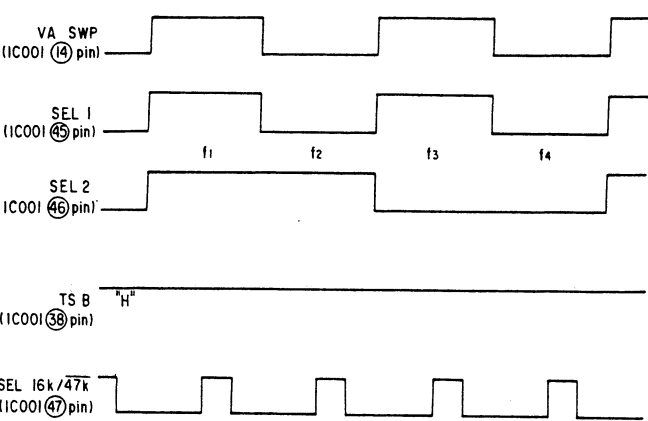
3-11-1. TIMING CHART 1 (PB, EDIT CUE)



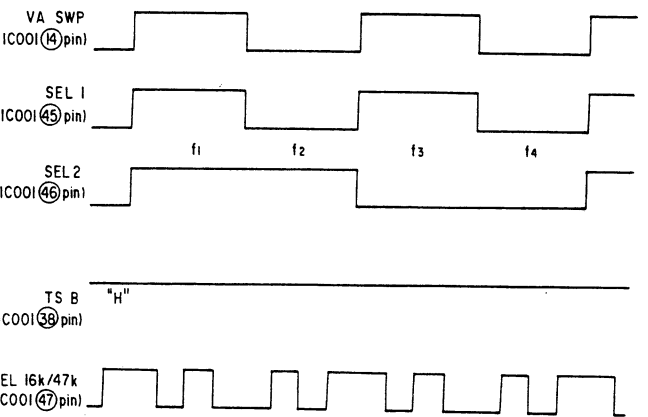
3-11-2. TIMING CHART 2 (EDIT REVIEW)



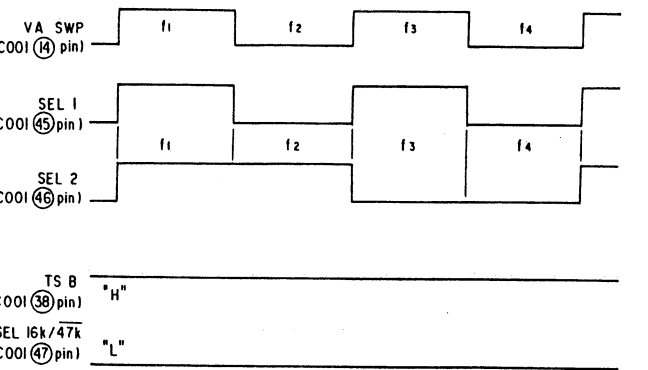
3-11-3. TIMING CHART 3 (CUE)



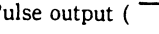
3-11-4. TIMING CHART 4 (REVIEW)



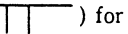
3-11-5. TIMING CHART 5 (REC)



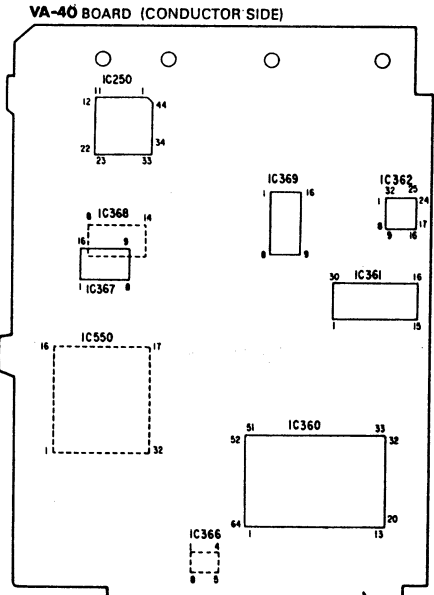
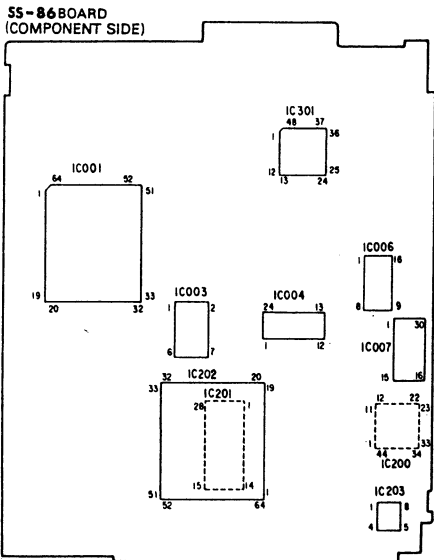
3-12. SYSTEM CONTROL – PERIPHERAL CIRCUIT INTERFACE

Signal	I/O	Pin No.	Input/Output Level																												
DEW	I	SS-86 board IC001①	Dew sensor input. Input voltage increases when there is dew.																												
VA REF	I	SS-86 board IC001④	Reference voltage input (5V DC) for A-D conversion of pin (1) (DEW), pin (2) (ATF ERR) and pin (3) (SWP DLY) input analog voltage (0-5V DC).																												
CLK	I	SS-86 board IC001⑦	Clock input from serial data transmission mode control(FC-18boardIC190) V cycle "L" pulse () in VTR mode.																												
DATA TO MASTER	O	SS-86 board IC001⑧	Serial data output to mode control. V cycle "L" pulse () in VTR mode.																												
DATA TO SLAVE	I	SS-86 board IC001⑨	Serial data input from mode control. V cycle "L" pulse () in VTR mode.																												
END SENS	I	SS-86 board IC001⑲	TAPE END sensor (SS-86 board PH001) input. "L" pulse input at tape end. Normally "H" .																												
TOP SENS	I	SS-86 board IC001⑳	TAPE TOP sensor (SS-86 board PH002) input. "L" pulse input at tape top. Normally "H" .																												
CS	I	SS-86 board IC001㉔	Serial signal chip select signal input from mode control. V cycle pulse ().																												
SLAVE RESET	I	SS-86 board IC001㉕	Reset signal input from mode control. Goes "L" when power is turned ON/OFF and servo/mechanism control (SS-86 board IC001) is reset.																												
E/T LED	O	SS-86 board IC001㉙	Pulse output () for lighting up T/E SENS LED (FP-53 board D302). REC/PB 100msec cycle. CUE/REVIEW 17msec cycle. FF/REW 3msec cycle. "L" when LED is lit up.																												
VTR POWER	O	SS-86 board IC001㉞	VTR power ON/OFF signal output. "H" during VTR mode and CAMERA mode. Operates DC-DC converter, and generates VTR 5V.																												
CAM POWER	O	SS-86 board IC001㉞	Camera power ON/OFF signal output. "H" during CAMERA mode. Operates DC-DC converter and generates voltages used for camera.																												
LOAD	O	SS-86 board IC001④①	"H" during cassette loading.																												
UNLOAD	O	SS-86 board IC001④②	"H" during cassette eject.																												
REC PROOF	I	SS-86 board IC001④⑨	"H" when cassette which can not be recorded (erase prevention) is inserted.																												
M SW1	I	SS-86 board IC001⑤①	<table><tr><td>Mechanism position</td><td>READY</td><td>REC/PB/CUE/REV/FF/REW</td><td>GL</td><td>STOP</td><td>EJECT</td><td>Mid-position</td></tr><tr><td>M SW1</td><td>L</td><td>H</td><td>H</td><td>H</td><td>L</td><td>H</td></tr><tr><td>M SW2</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>H</td></tr><tr><td>M SW3</td><td>H</td><td>L</td><td>L</td><td>H</td><td>H</td><td>H</td></tr></table>	Mechanism position	READY	REC/PB/CUE/REV/FF/REW	GL	STOP	EJECT	Mid-position	M SW1	L	H	H	H	L	H	M SW2	H	H	L	L	L	H	M SW3	H	L	L	H	H	H
Mechanism position	READY	REC/PB/CUE/REV/FF/REW		GL	STOP	EJECT	Mid-position																								
M SW1	L	H		H	H	L	H																								
M SW2	H	H		L	L	L	H																								
M SW3	H	L	L	H	H	H																									
M SW2	I	SS-86 board IC001⑤②																													
M SW3	I	SS-86 board IC001⑤③																													
V SO	O	SS-86 board IC001⑤③	Video serial data output.																												
BATTERY LEVEL	I	SS-86 board IC001⑥②	Main battery voltage level detection input.																												
T REEL FG	I	SS-86 board IC001⑥③	T REEL FG (FP-53 board D304) input. Pulse corresponds to S reel rotation.																												
S REEL FG	I	SS-86 board IC001⑥④	S REEL FG (FP-53 board D303) input. Pulse corresponds to S reel rotation.																												

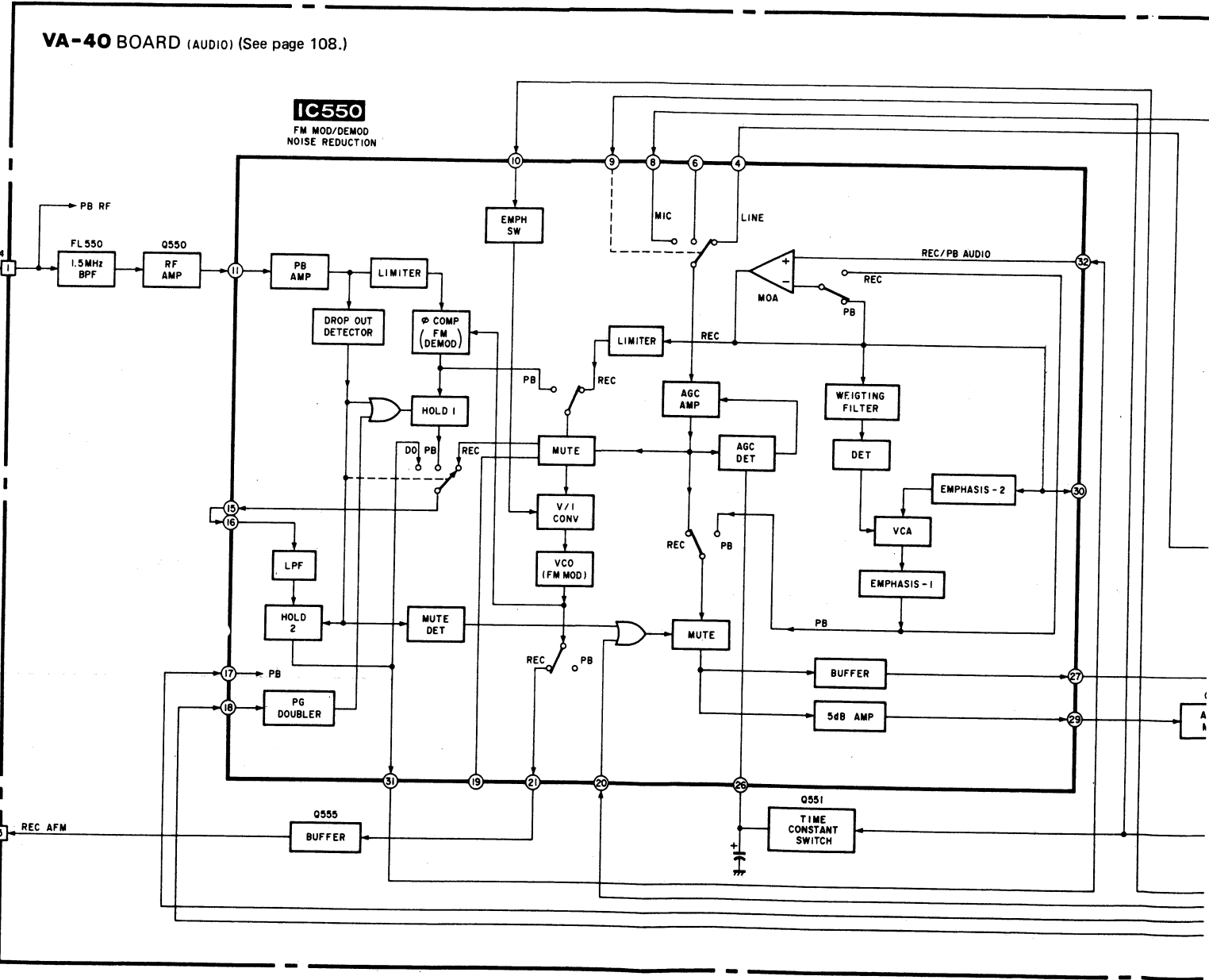
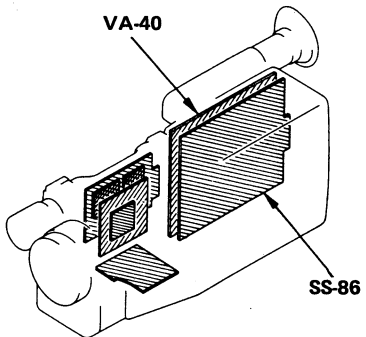
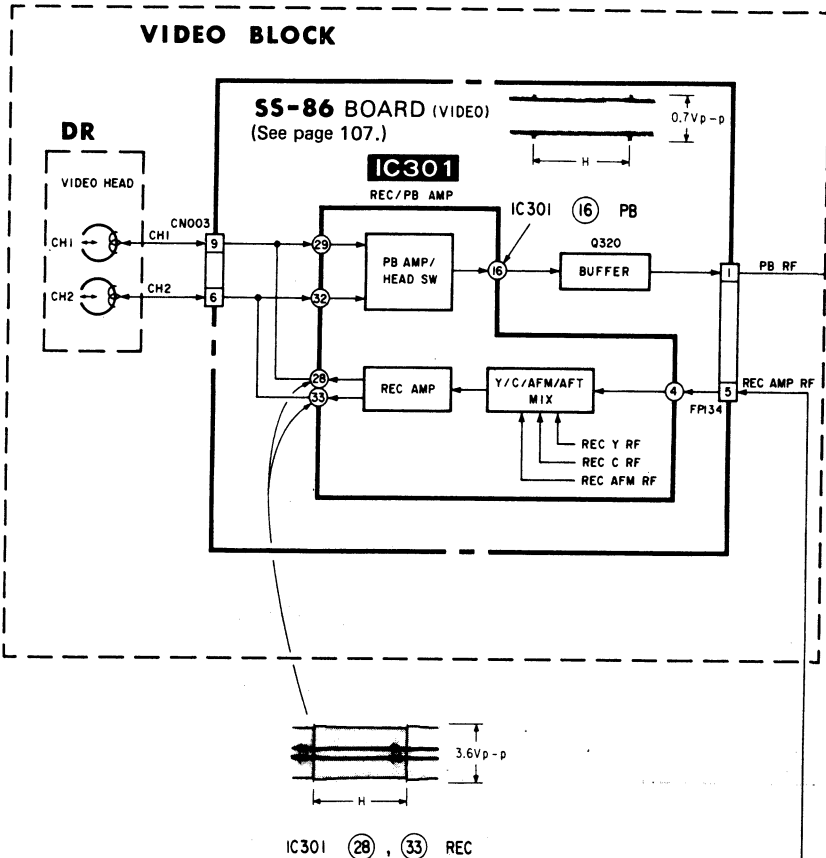
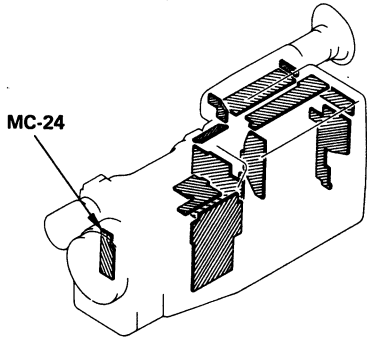
3-12. SYSTEM CONTROL – PERIPHERAL CIRCUIT INTERFACE

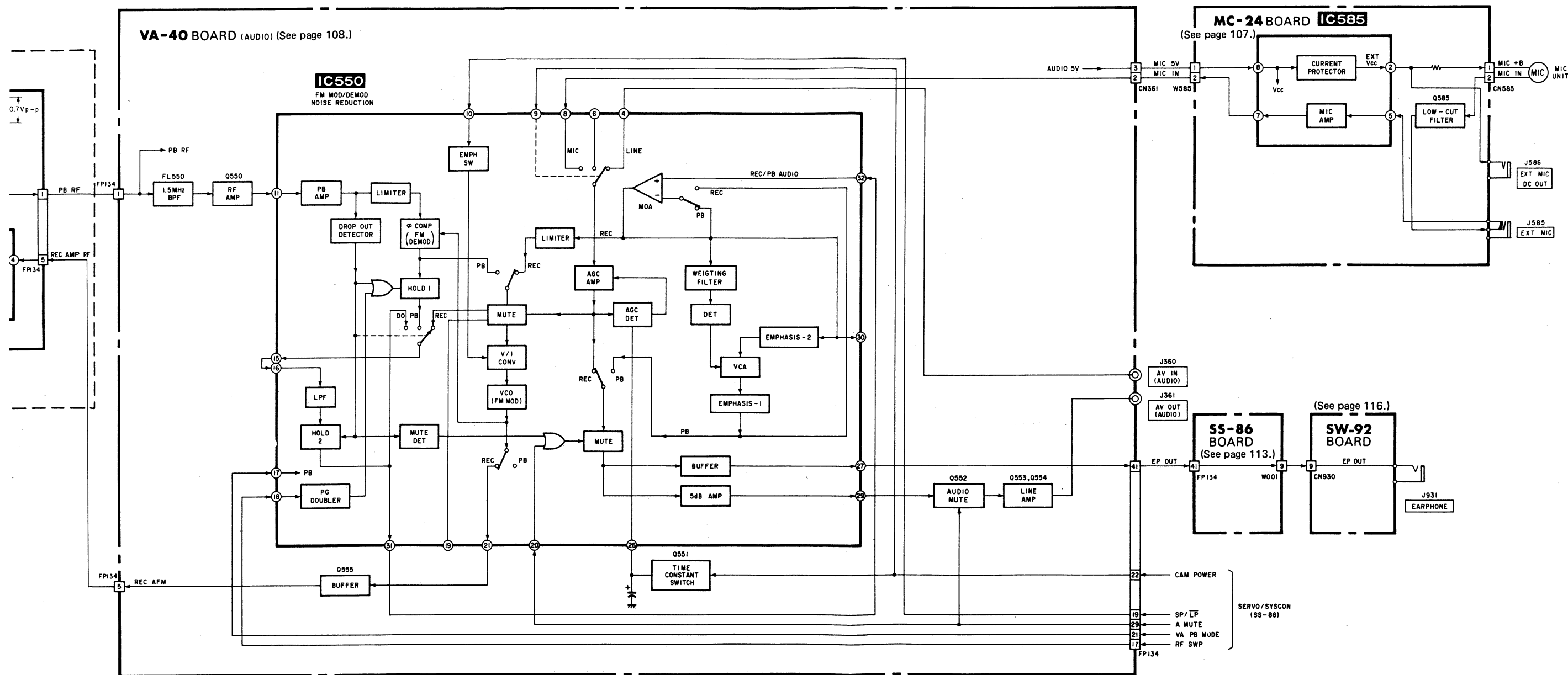
Signal	I/O	Pin No.	Input/Output Level																												
DEW	I	SS-86 board IC001①	Dew sensor input. Input voltage increases when there is dew.																												
VA REF	I	SS-86 board IC001④	Reference voltage input (5V DC) for A-D conversion of pin (1) (DEW), pin (2) (ATF ERR) and pin (3) (SWP DLY) input analog voltage (0-5V DC).																												
CLK	I	SS-86 board IC001⑦	Clock input from serial data transmission mode control(FC-18boardIC190). V cycle "L" pulse () in VTR mode.																												
DATA TO MASTER	O	SS-86 board IC001⑧	Serial data output to mode control. V cycle "L" pulse () in VTR mode.																												
DATA TO SLAVE	I	SS-86 board IC001⑨	Serial data input from mode control. V cycle "L" pulse () in VTR mode.																												
END SENS	I	SS-86 board IC001⑱	TAPE END sensor (SS-86 board PH001) input. "L" pulse input at tape end. Normally "H" .																												
TOP SENS	I	SS-86 board IC001⑳	TAPE TOP sensor (SS-86 board PH002) input. "L" pulse input at tape top. Normally "H" .																												
CS	I	SS-86 board IC001㉒	Serial signal chip select signal input from mode control. V cycle pulse ().																												
SLAVE RESET	I	SS-86 board IC001㉓	Reset signal input from mode control. Goes "L" when power is turned ON/OFF and servo/mechanism control (SS-86 board IC001) is reset.																												
E/T LED	O	SS-86 board IC001㉔	Pulse output () for lighting up T/E SENS LED (FP-53 board D302). REC/PB 100msec cycle. CUE/REVIEW 17msec cycle. FF/REW 3msec cycle. "L" when LED is lit up.																												
VTR POWER	O	SS-86 board IC001㉕	VTR power ON/OFF signal output. "H" during VTR mode and CAMERA mode. Operates DC-DC converter, and generates VTR 5V.																												
CAM POWER	O	SS-86 board IC001㉖	Camera power ON/OFF signal output. "H" during CAMERA mode. Operates DC-DC converter and generates voltages used for camera.																												
LOAD	O	SS-86 board IC001④①	"H" during cassette loading.																												
UNLOAD	O	SS-86 board IC001④②	"H" during cassette eject.																												
REC PROOF	I	SS-86 board IC001④⑨	"H" when cassette which can not be recorded (erase prevention) is inserted.																												
M SW1	I	SS-86 board IC001⑤⑩	Mode switch input for mechanism. Indicates mechanism position. <table><tr><th>Mechanism position</th><th>READY</th><th>REC/PB/CUE/REV/FF/REW</th><th>GL</th><th>STOP</th><th>EJECT</th><th>Mid-position</th></tr><tr><td>M SW1</td><td>L</td><td>H</td><td>H</td><td>H</td><td>L</td><td>H</td></tr><tr><td>M SW2</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>H</td></tr><tr><td>M SW3</td><td>H</td><td>L</td><td>L</td><td>H</td><td>H</td><td>H</td></tr></table>	Mechanism position	READY	REC/PB/CUE/REV/FF/REW	GL	STOP	EJECT	Mid-position	M SW1	L	H	H	H	L	H	M SW2	H	H	L	L	L	H	M SW3	H	L	L	H	H	H
Mechanism position	READY	REC/PB/CUE/REV/FF/REW		GL	STOP	EJECT	Mid-position																								
M SW1	L	H		H	H	L	H																								
M SW2	H	H	L	L	L	H																									
M SW3	H	L	L	H	H	H																									
M SW2	I	SS-86 board IC001⑤①																													
M SW3	I	SS-86 board IC001⑤②																													
V SO	O	SS-86 board IC001⑤③	Video serial data output.																												
BATTERY LEVEL	I	SS-86 board IC001⑥②	Main battery voltage level detection input.																												
T REEL FG	I	SS-86 board IC001⑥③	T REEL FG (FP-53 board D304) input. Pulse corresponds to S reel rotation.																												
S REEL FG	I	SS-86 board IC001⑥④	S REEL FG (FP-53 board D303) input. Pulse corresponds to S reel rotation.																												

3-13. AUDIO BLOCK DIAGRAM • () near the board name indicates the schematic diagram page.



• Components on the rear side indicated by "..." line.

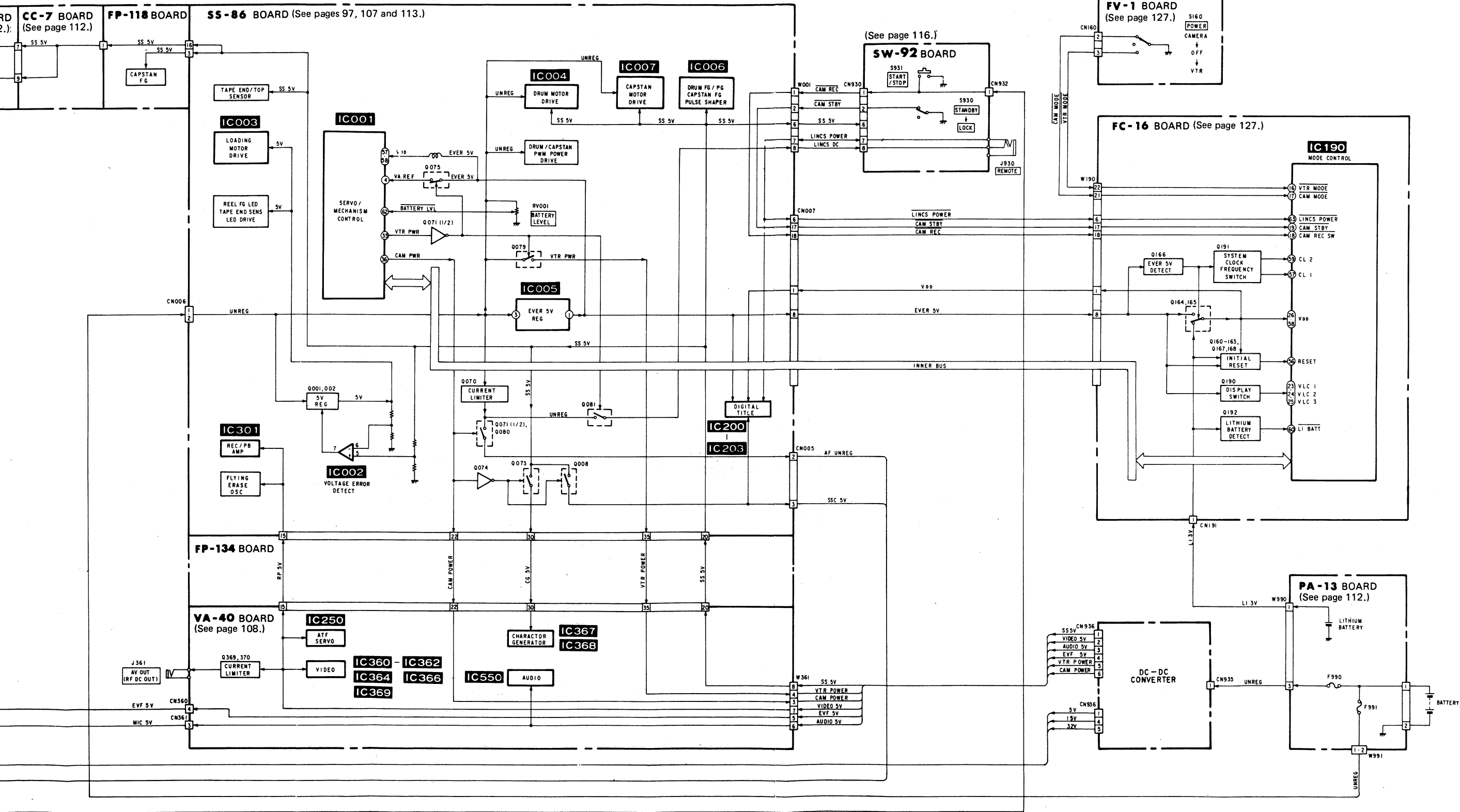




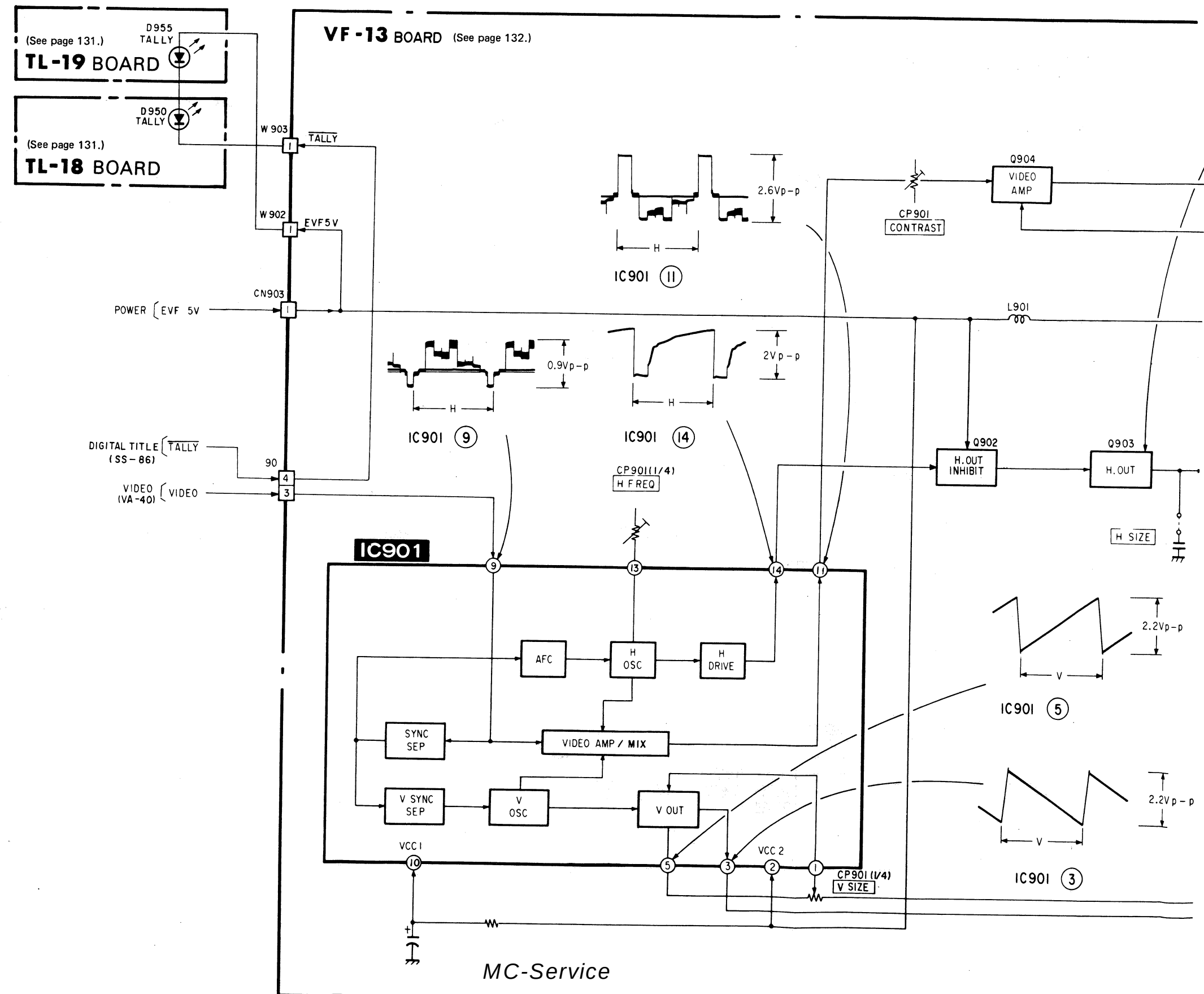
MC-Service

- () near the board name indicates the schematic diagram page.

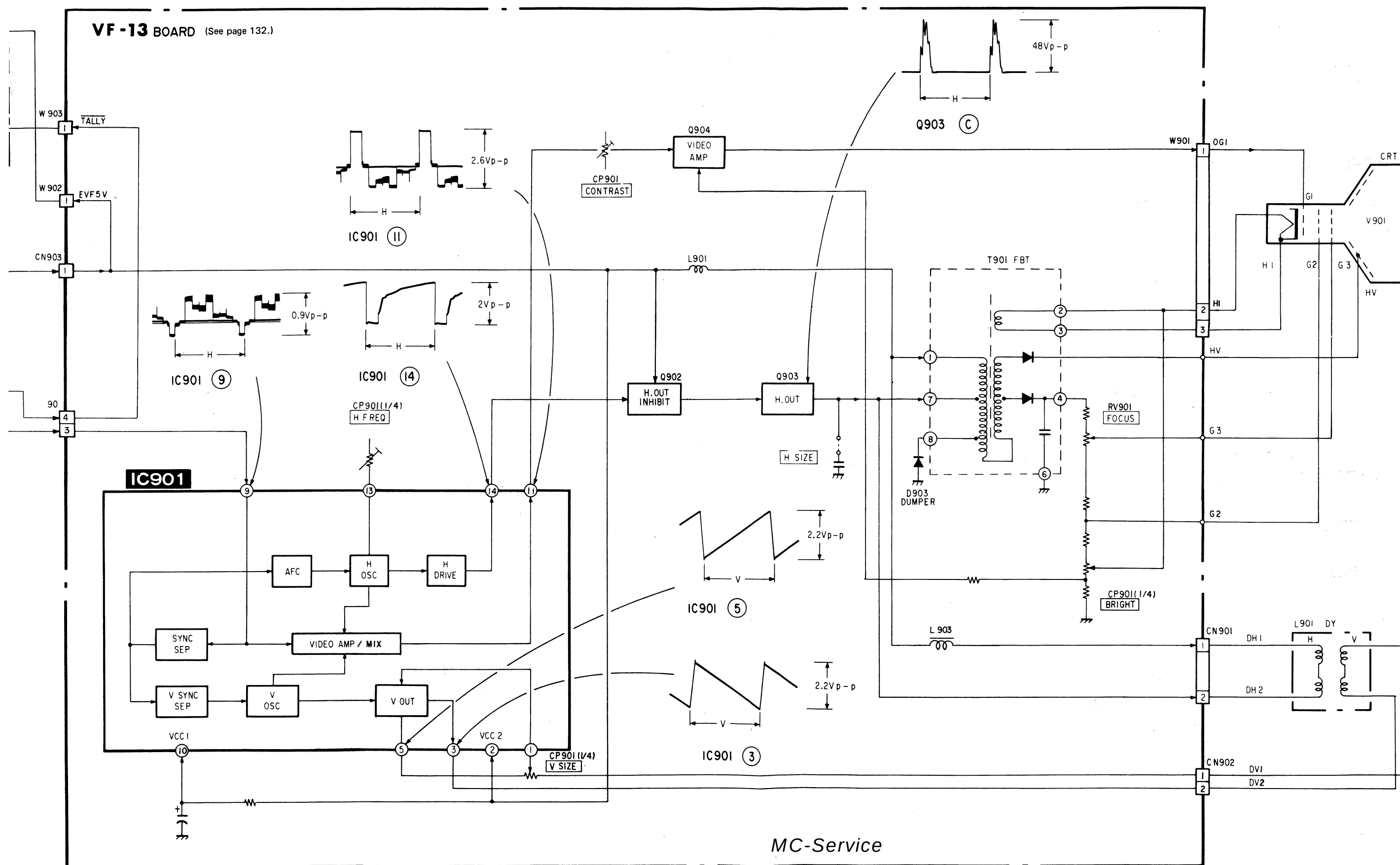




3-15. VIEWFINDER BLOCK DIAGRAM • () near the board name indicates the schematic diagram page.



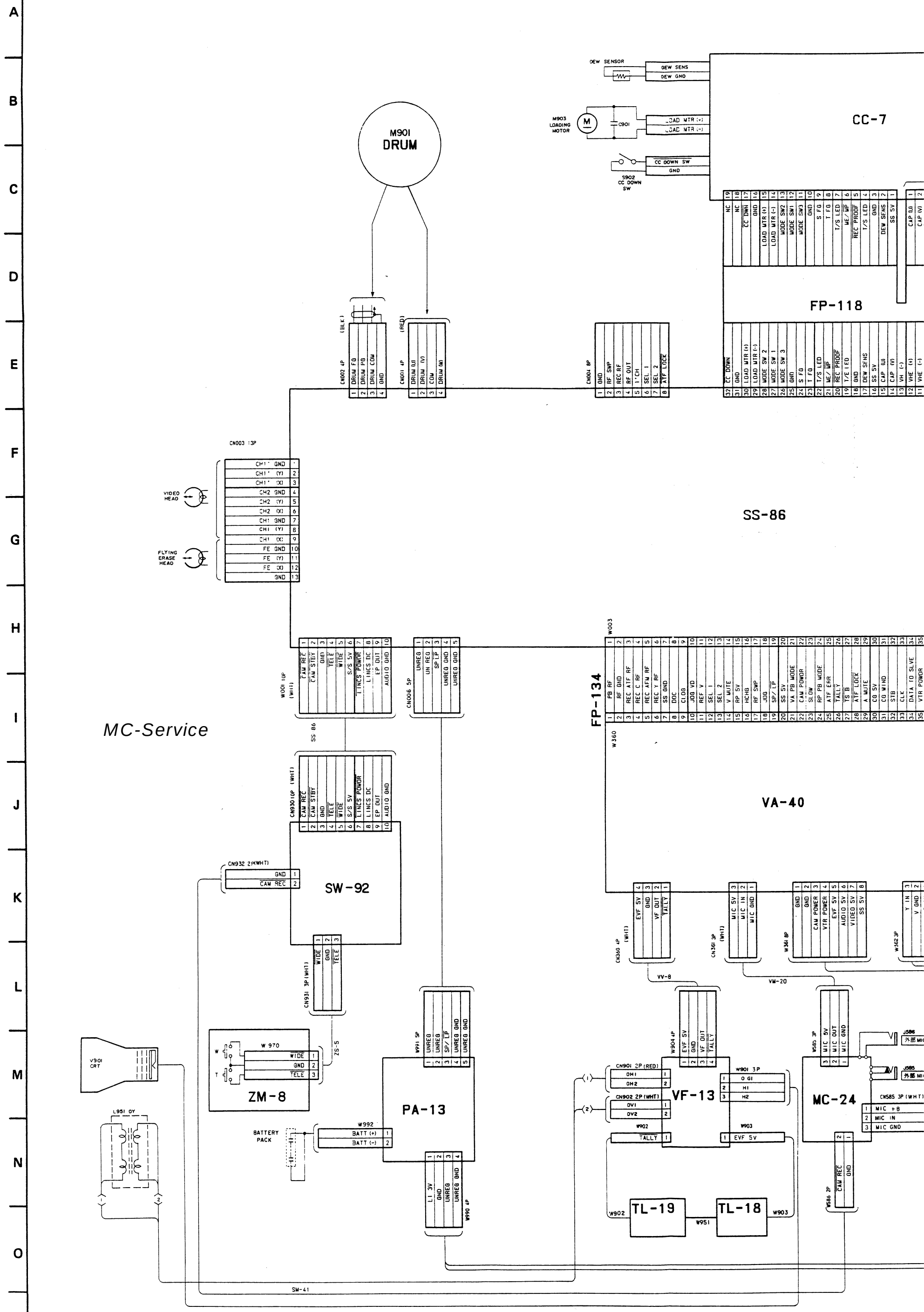
() near the board name indicates the schematic diagram page.

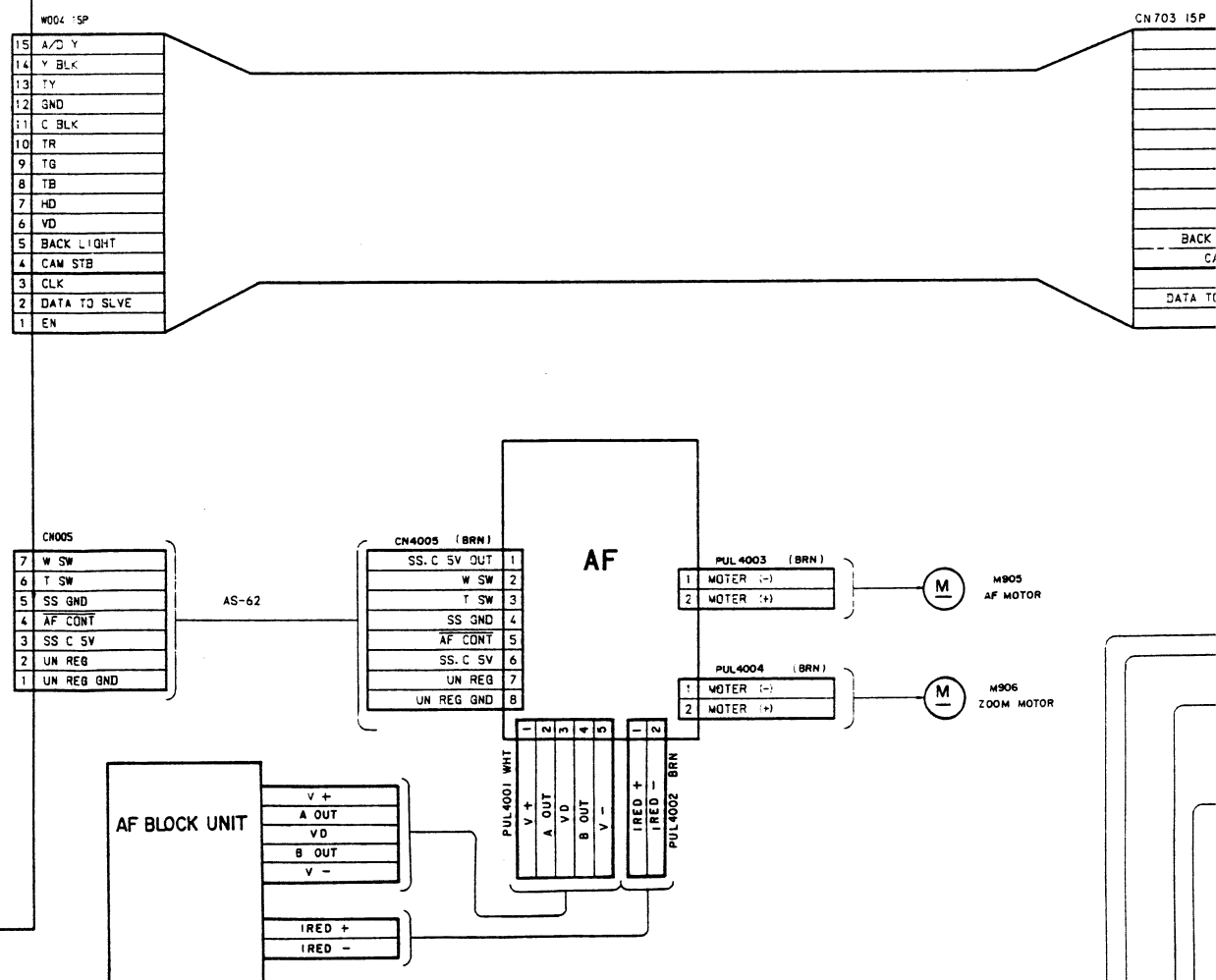
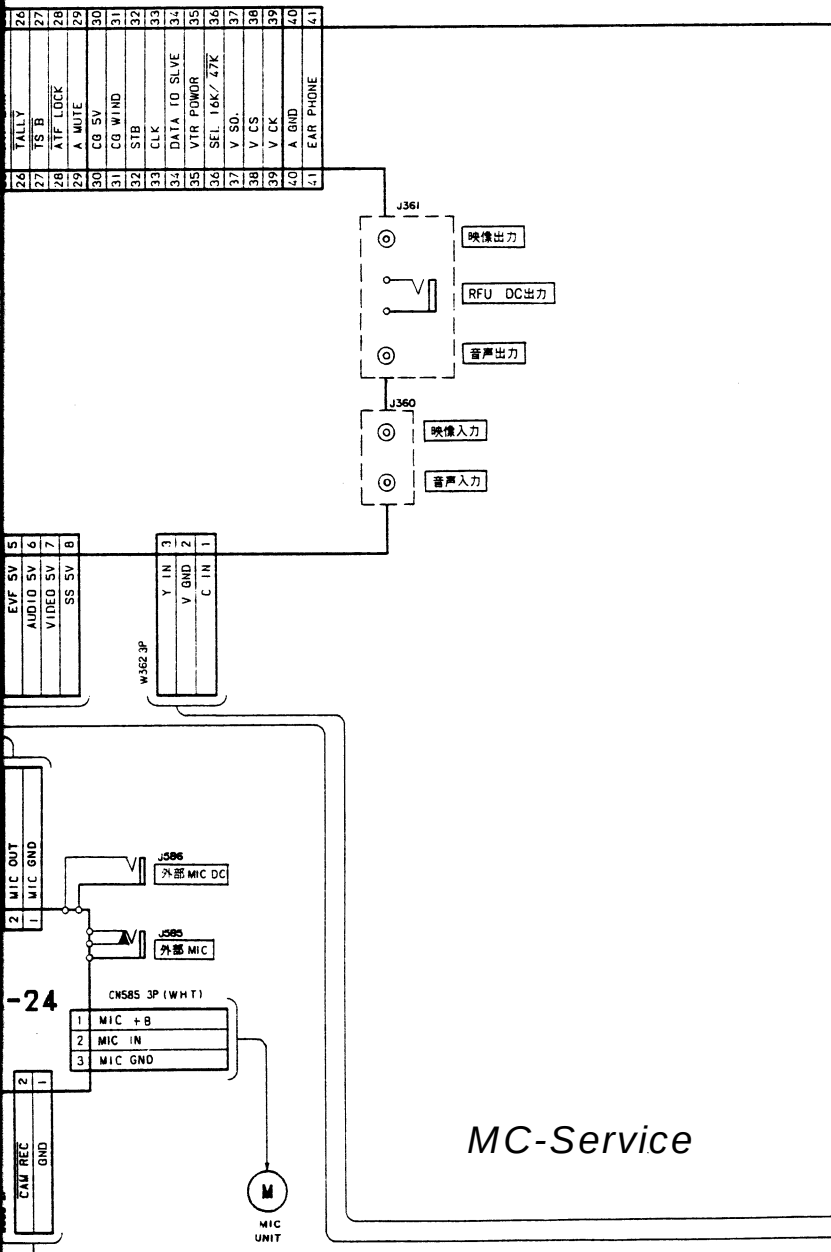
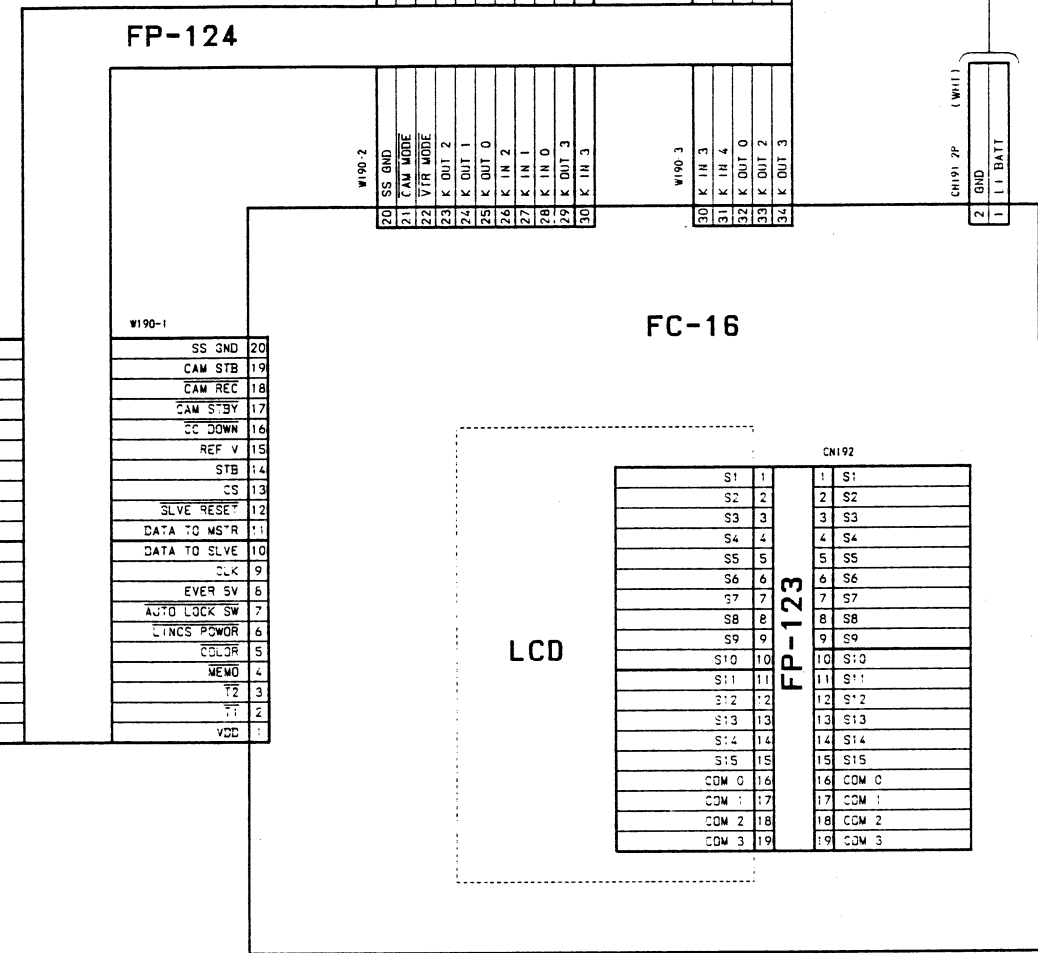
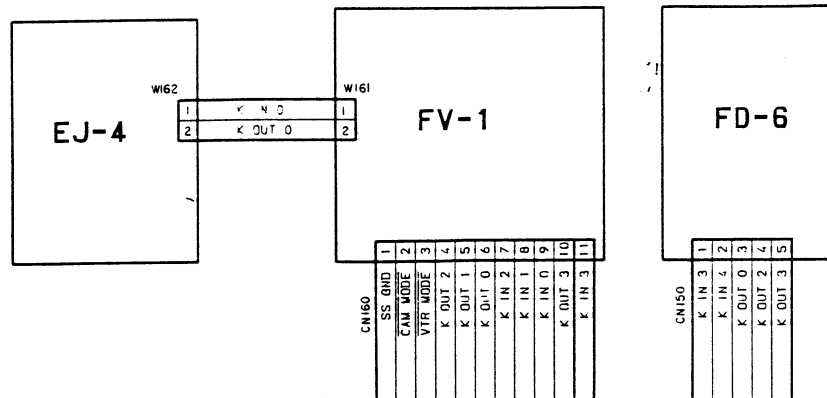
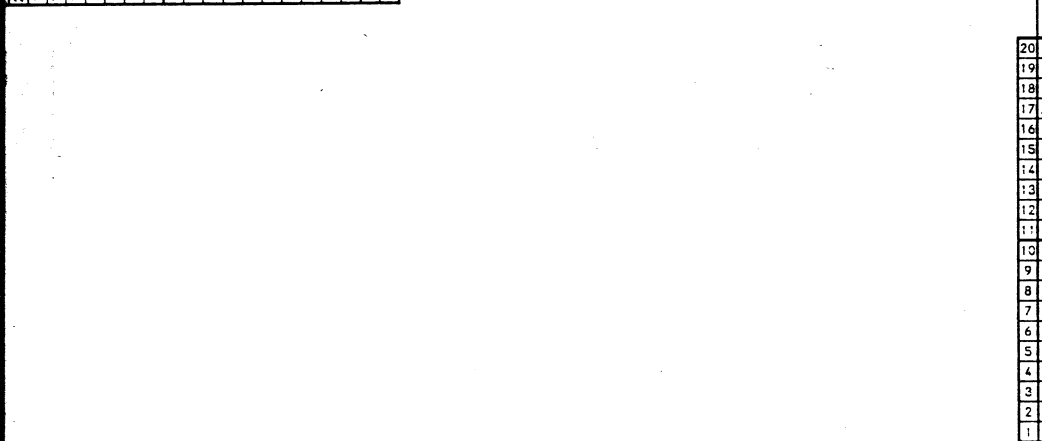
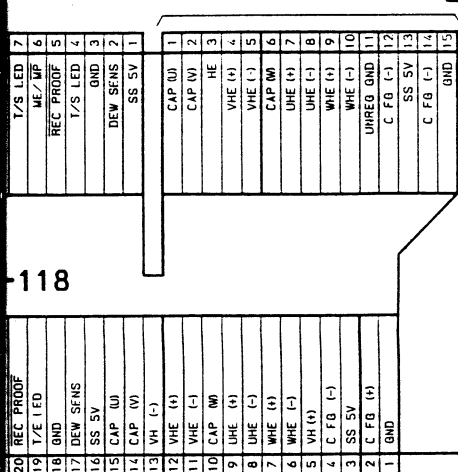
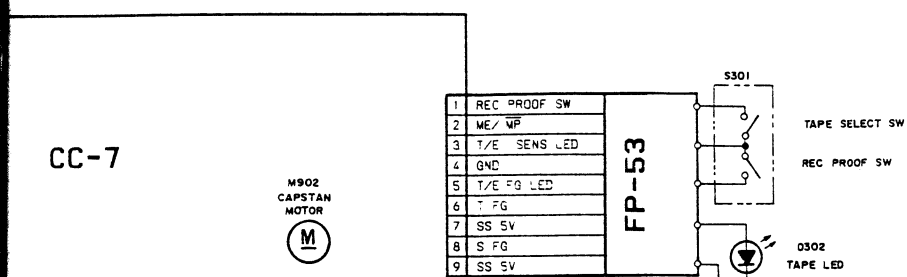


SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. FRAME SCHEMATIC DIAGRAM





CC-7

MS902
CAPSTAN
MOTOR


FP-53

TAPE SELECT SW
REC PROOF SW
0302
APE LED

EJ-4

FV-1

FD-6

FP-118

FP-124

FC-16

LCD

FP-123

MC-Service

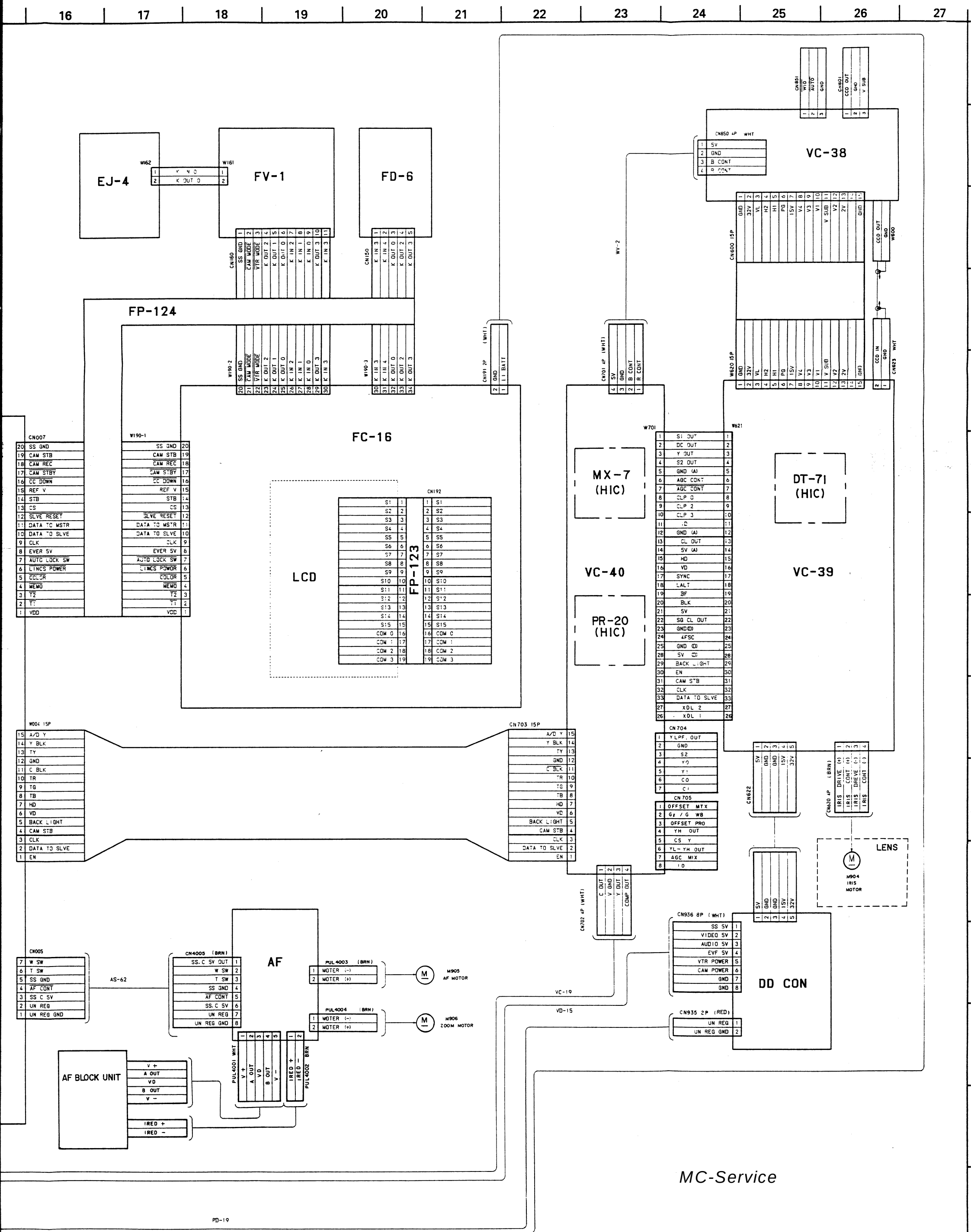
MC-24

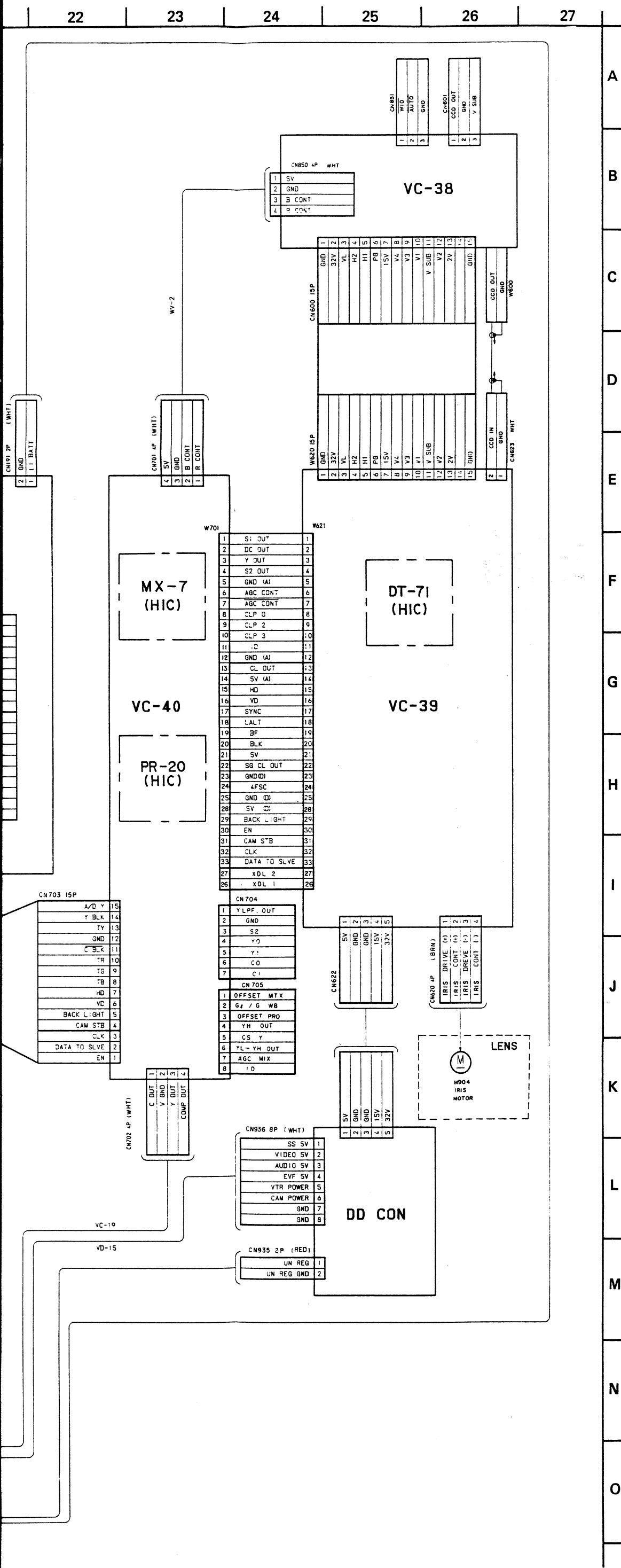
AF BLOCK UNIT

AF

M905
AF MOTOR

M906
DQM MOTOR





Precautions for replacement of CCD imager block.

- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.

When indicating parts by reference number, please include the board name.

MC-Service

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
 (In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- : indicates a lead wire mounted on the component side.
- : indicates a lead wire mounted on the printed side.
- ▨ : Pattern from the side which enables seeing.
- : Circled numbers refer to waveforms.

For schematic diagram:

- Caution when replacing chip parts.
 New parts must be attached after removal of chip.
 Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
 kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.

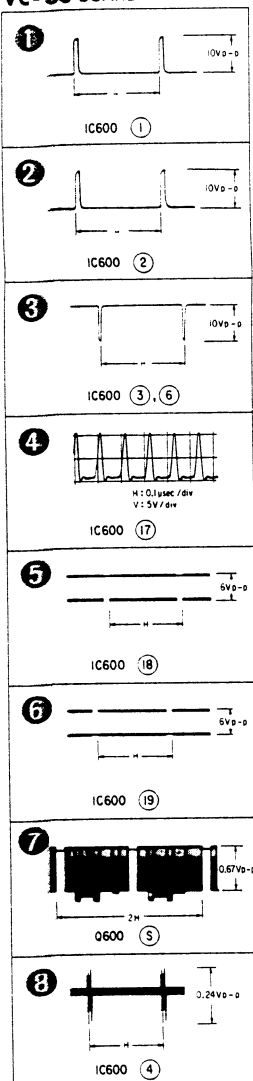
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B+ line.

- Voltagages are dc between measurement points and ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- : IN/OUT direction of B line (+, -).
- Readings are taken with a color-bar signal input.
- Circled numbers refer to waveforms.

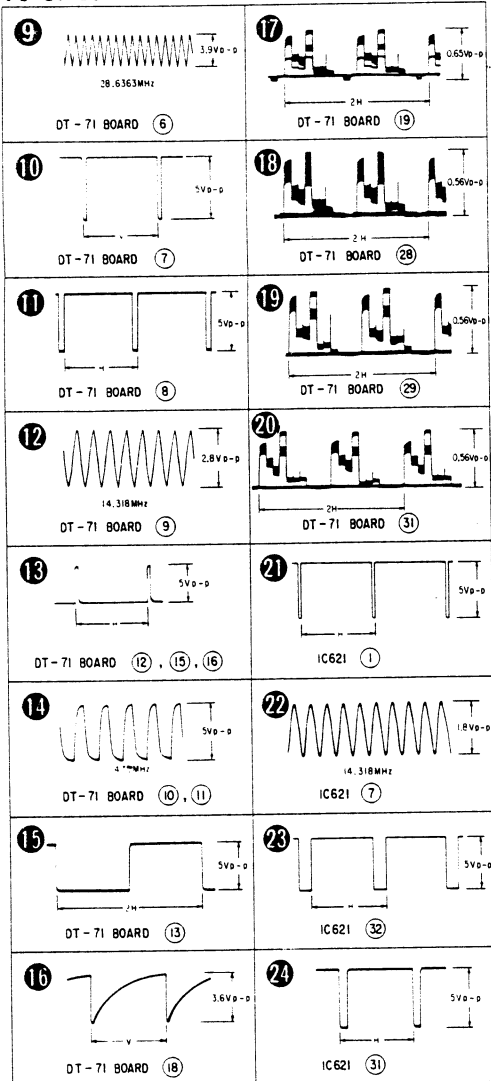
When indicating parts
 ence number, please in
 board name.

Note:
 The components identi-
 fied by mark △ or dot-
 ted line with mark △
 are critical for safety.
 Replace only with part
 number specified.

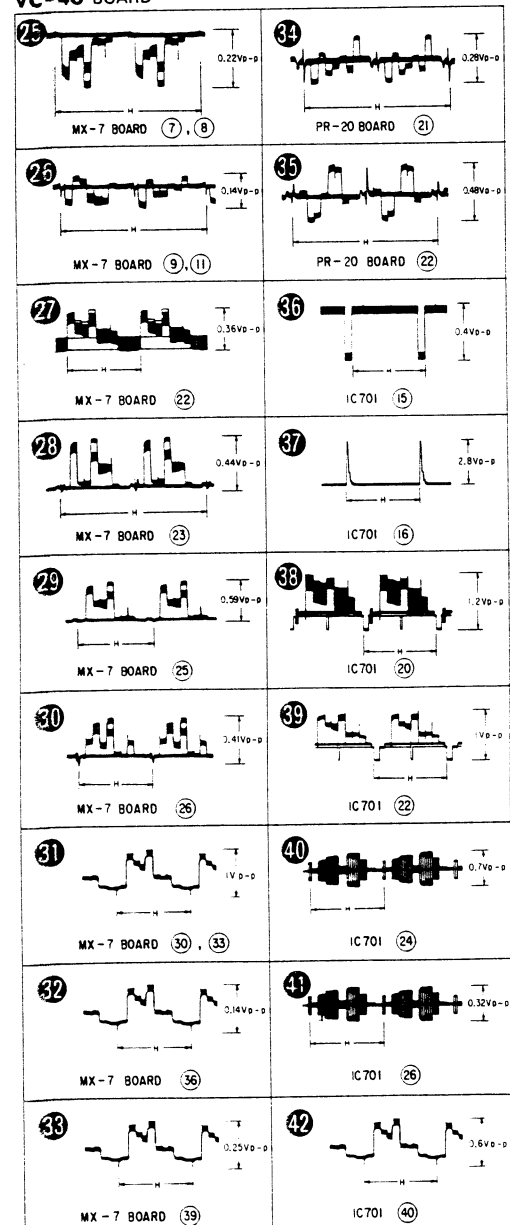
VC-38 BOARD



VC-39 BOARD



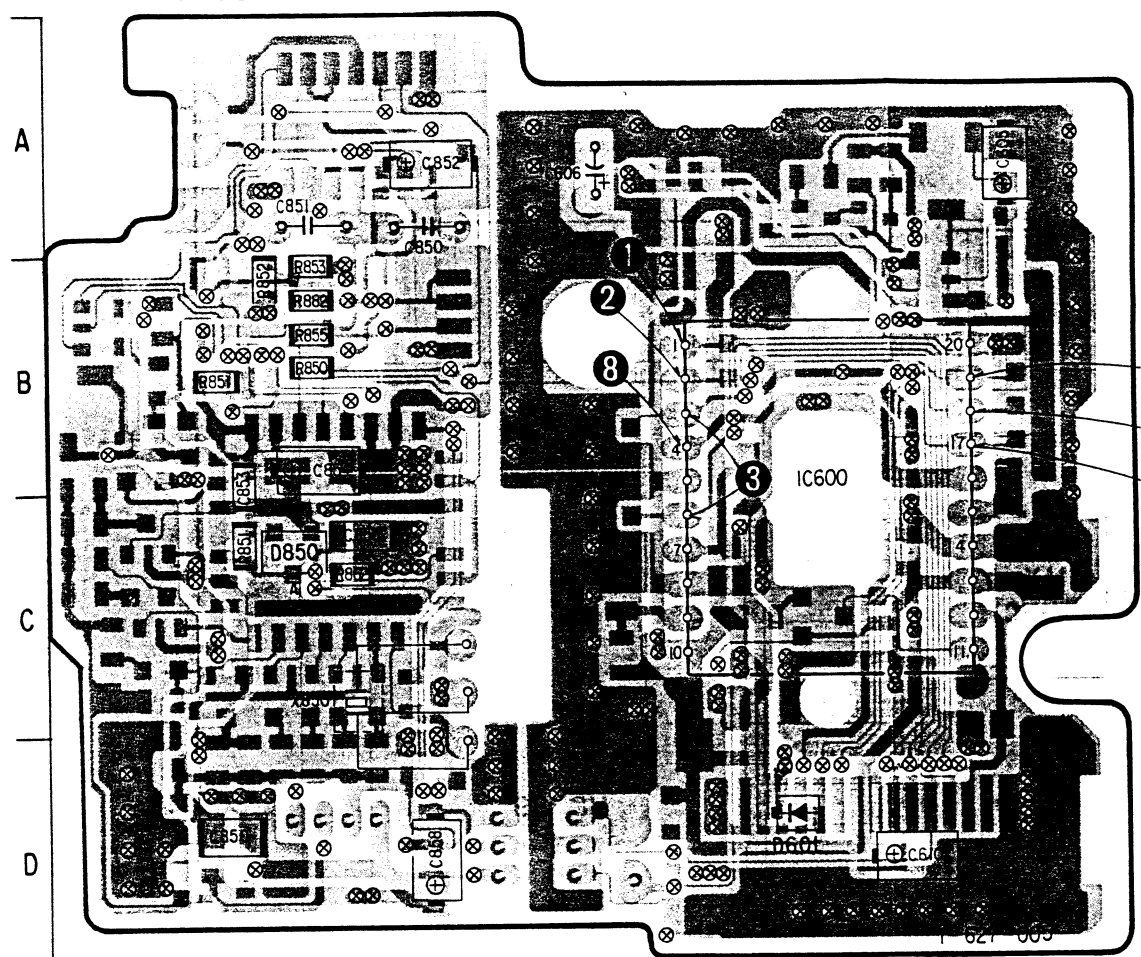
VC-40 BOARD



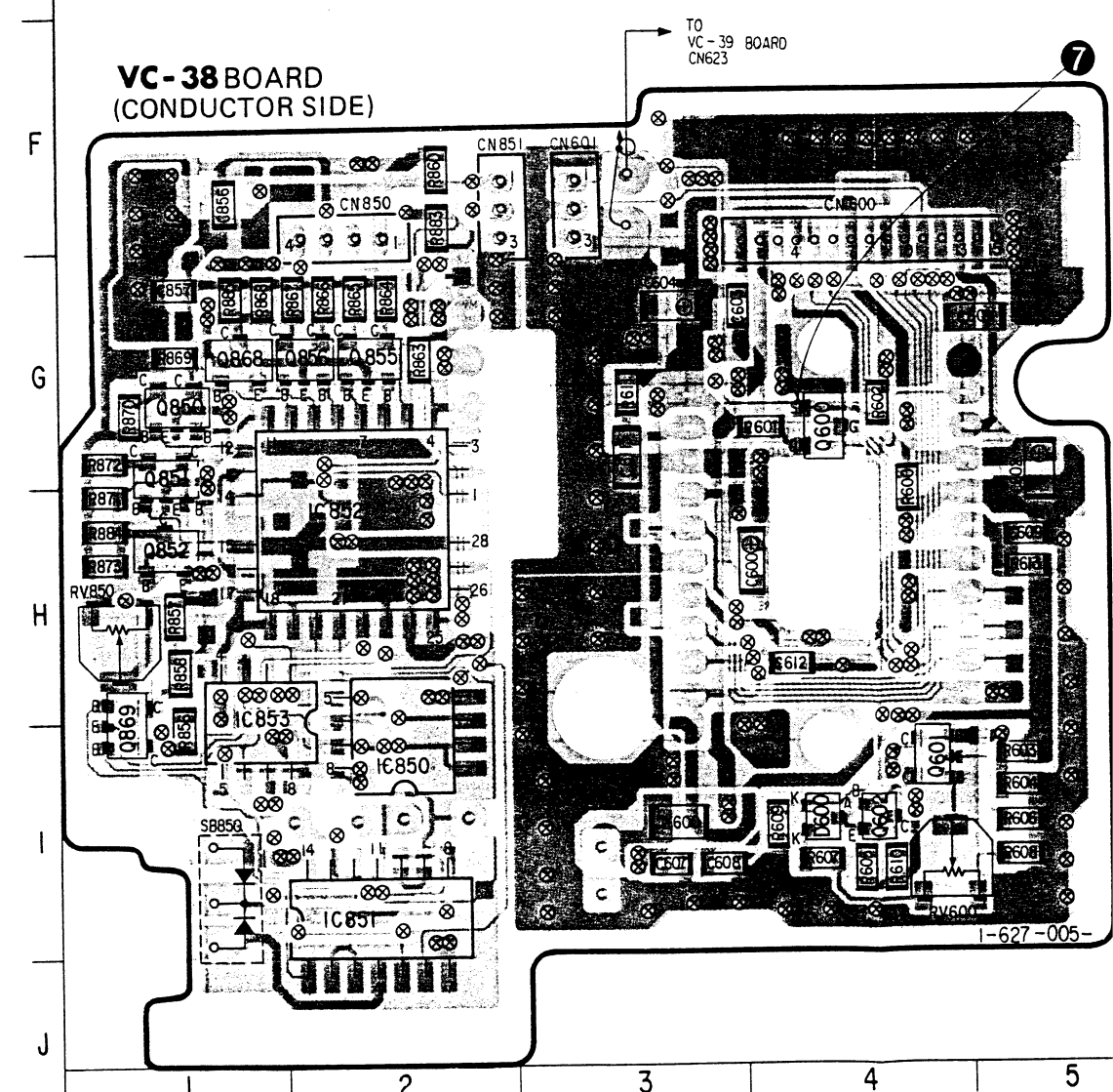
VC-38 BOARD

CN600	F-4
CN601	F-3
CN850	F-2
CN851	F-3
D600	I-4
D601	D-4
D850	C-2
IC850	I-2
IC851	I-2
IC852	H-2
IC853	I-2
Q600	G-4
Q601	I-4
Q602	I-4
Q850	G-1
Q851	G-1
Q852	H-1
Q853	G-2
Q854	G-2
Q855	G-1
Q856	H-1
RV600	I-4
RV850	H-1

VC-38 BOARD (COMPONENT SIDE)



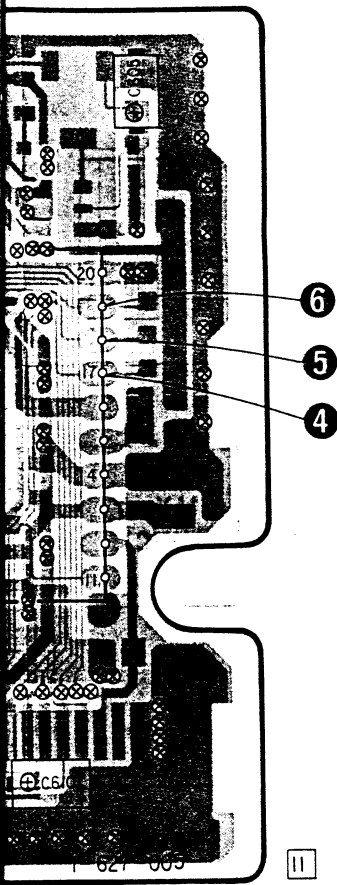
VC-38 BOARD (CONDUCTOR SIDE)



When indicating parts by reference number, please include the board name.

Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

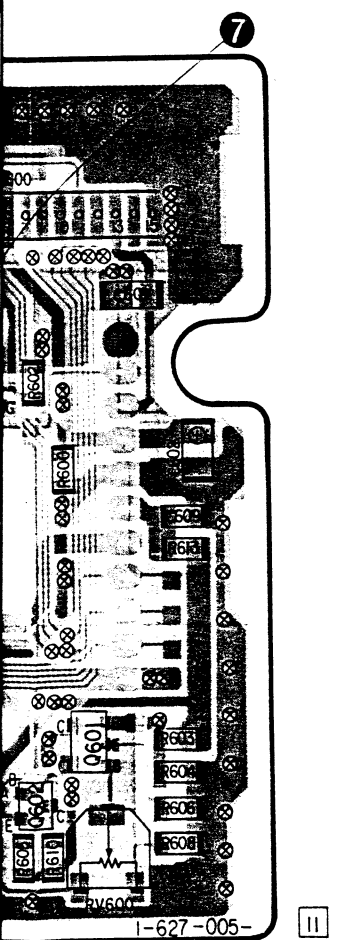
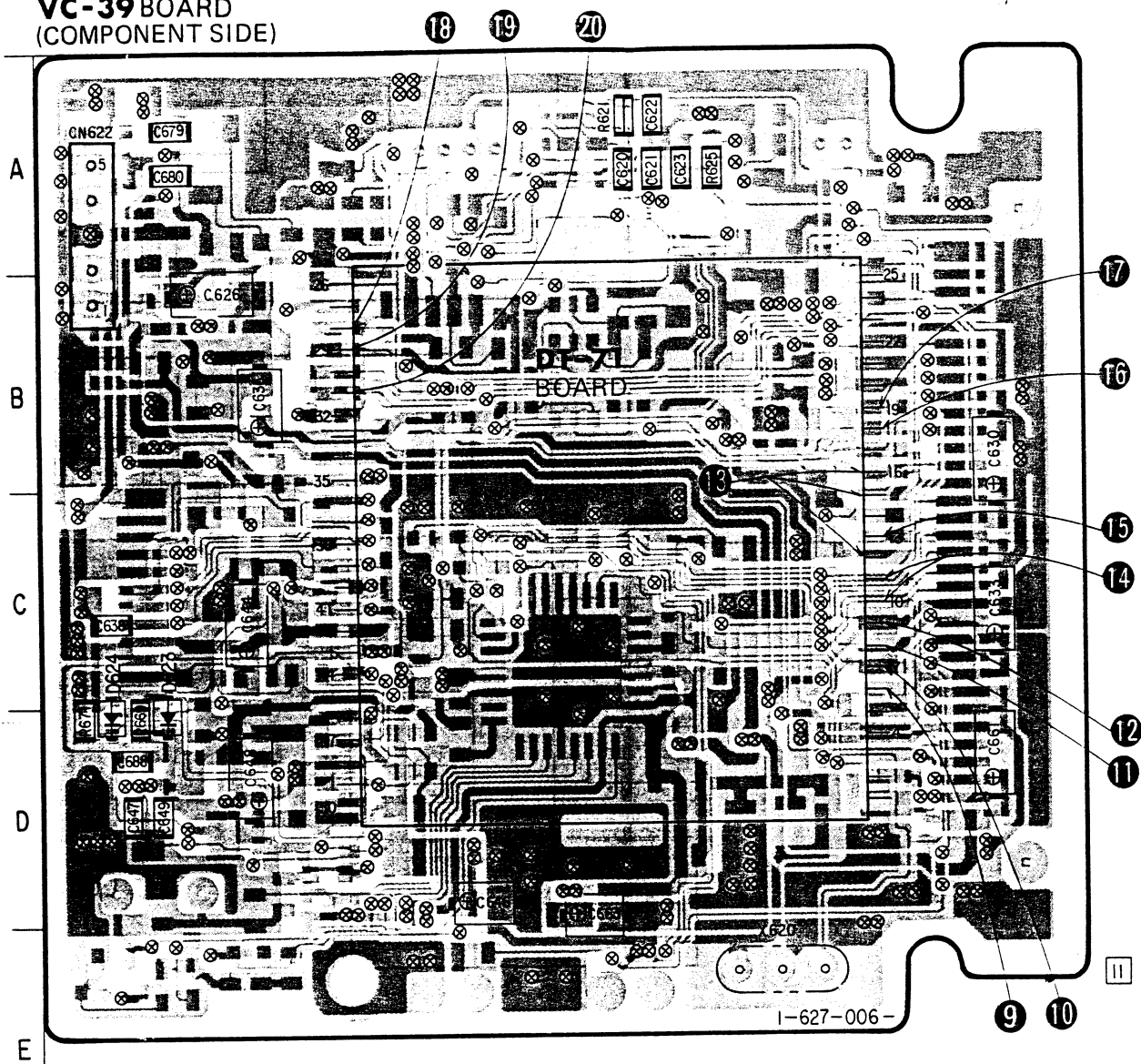
Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



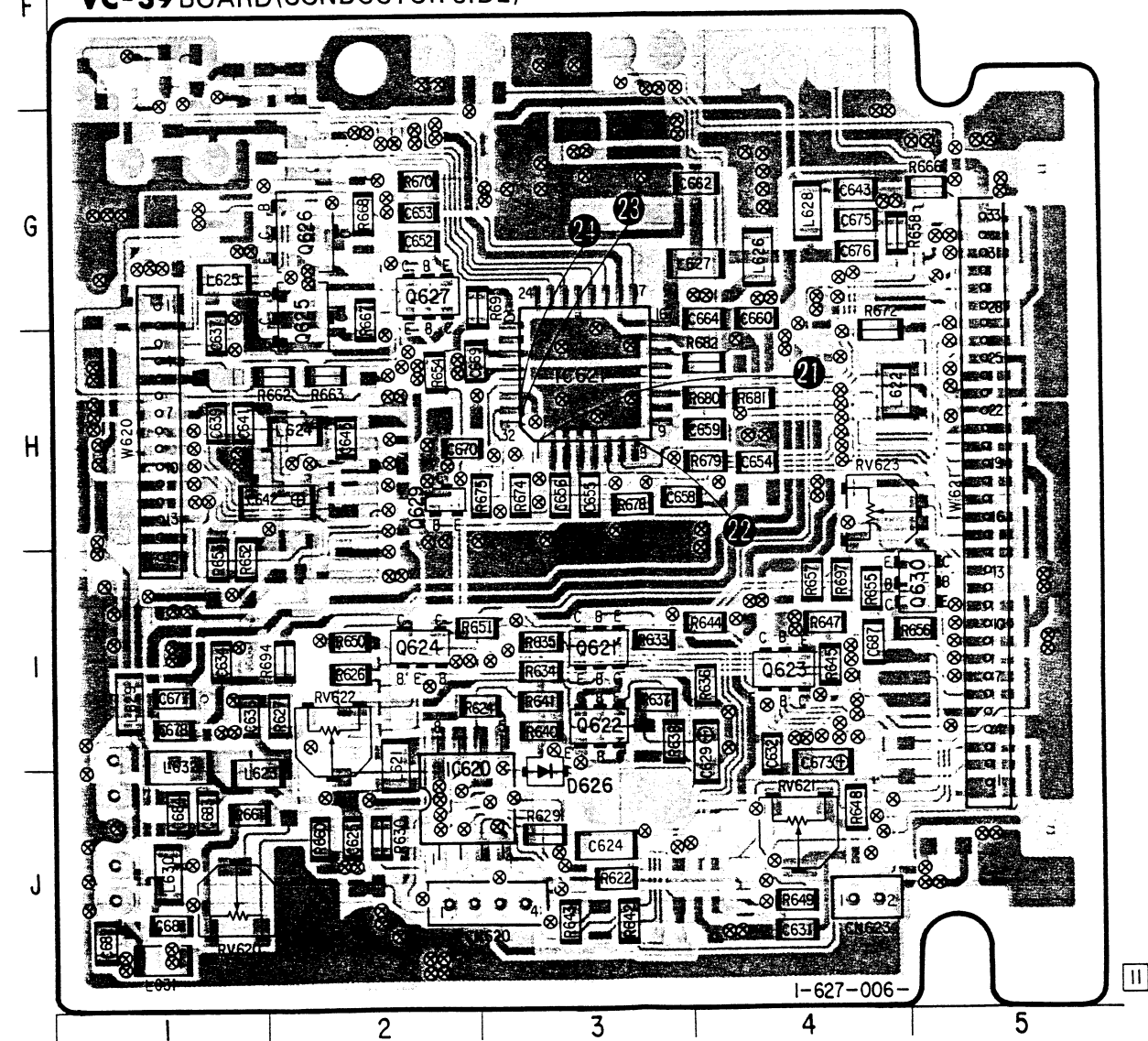
VC-39 BOARD

- | | |
|-------|-----|
| CN620 | J-3 |
| CN622 | A-1 |
| CN623 | J-4 |
| | |
| D623 | C-1 |
| D624 | C-1 |
| D626 | J-3 |
| | |
| IC620 | J-2 |
| IC621 | H-3 |
| | |
| Q621 | I-3 |
| Q622 | I-3 |
| Q623 | I-4 |
| Q624 | I-2 |
| Q625 | G-2 |
| Q626 | G-2 |
| Q627 | G-2 |
| Q629 | H-2 |
| Q630 | I-5 |
| | |
| RV620 | J-1 |
| RV621 | J-4 |
| RV622 | I-2 |
| RV623 | H-4 |

VC-39 BOARD
(COMPONENT SIDE)



VC-39 BOARD (CONDUCTOR SIDE)

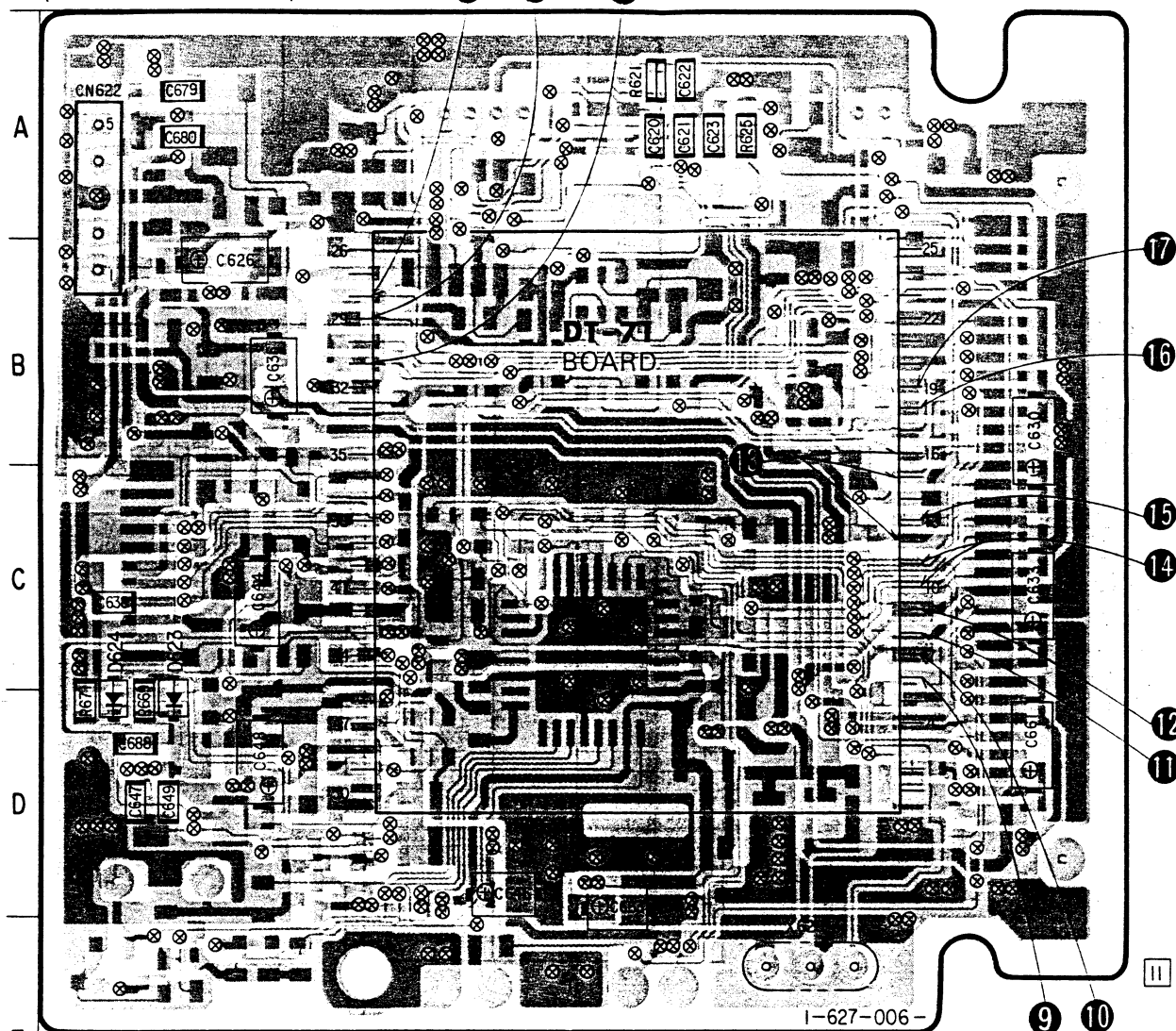


s by refer-
include the

Note:
Les composants identifiés par
une marque  sont critiques
pour la sécurité.
Ne les remplacer que par une
pièce portant le numéro spéci-
fié.

VC-39 BOARD
(COMPONENT SIDE)

18 19 20



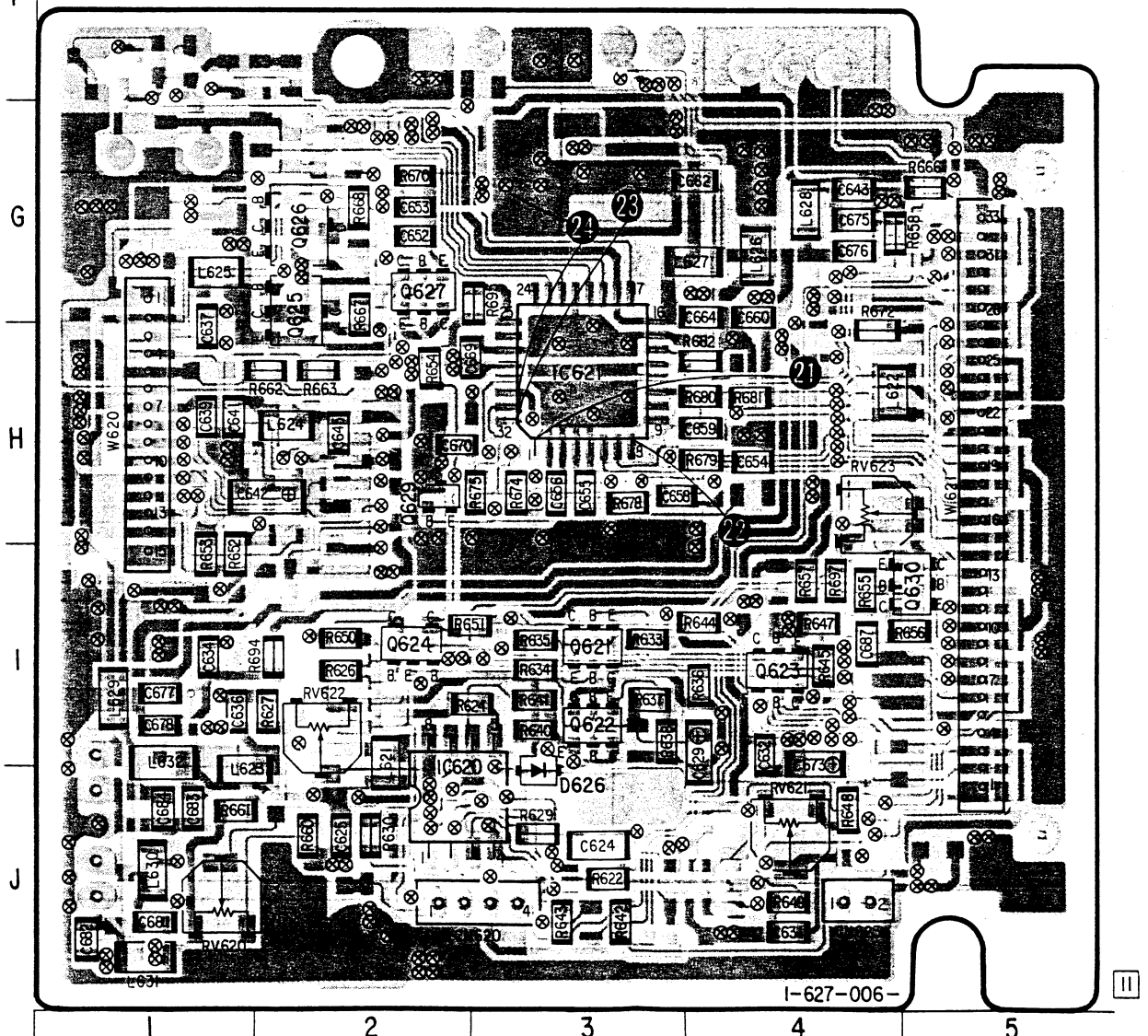
VC-39 BOARD

CN620	J-3
CN622	A-1
CN623	J-4
D623	C-1
D624	C-1
D626	J-3
IC620	J-2
IC621	H-3
Q621	I-3
Q622	I-3
Q623	I-4
Q624	I-2
Q625	G-2
Q626	G-2
Q627	G-2
Q629	H-2
Q630	I-5
RV620	J-1
RV621	J-4
RV622	I-2
RV623	H-4

VC-40 BOARD

CN701	D-5
CN702	C-7
CN703	A-7
CN704	D-2
CN705	D-3
D701	J-4
IC701	I-3
Q701	J-2
Q702	J-2
Q705	G-6
Q706	H-6
Q707	H-6
Q708	F-4
Q709	G-4
Q710	I-3
Q711	H-3
RV701	J-2
RV702	I-2
RV703	H-2
RV704	H-2
RV705	H-2
RV706	G-2
RV707	G-2
RV708	F-4
RV709	I-5
RV710	H-5
RV711	I-6
RV712	J-5
RV713	J-5
RV714	J-6
RV715	I-6
RV716	J-4
RV717	J-4
RV718	J-3
RV719	J-2
RV720	J-2
RV722	H-5
RV724	H-5

VC-39 BOARD (CONDUCTOR SIDE)



Note:

- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

Caution:

- Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
- Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.
- Digital transistor (VC-39: Q624) is transistor with resistor. Refer to the VC-39 board schematic diagram for digital transistor.

VC-38

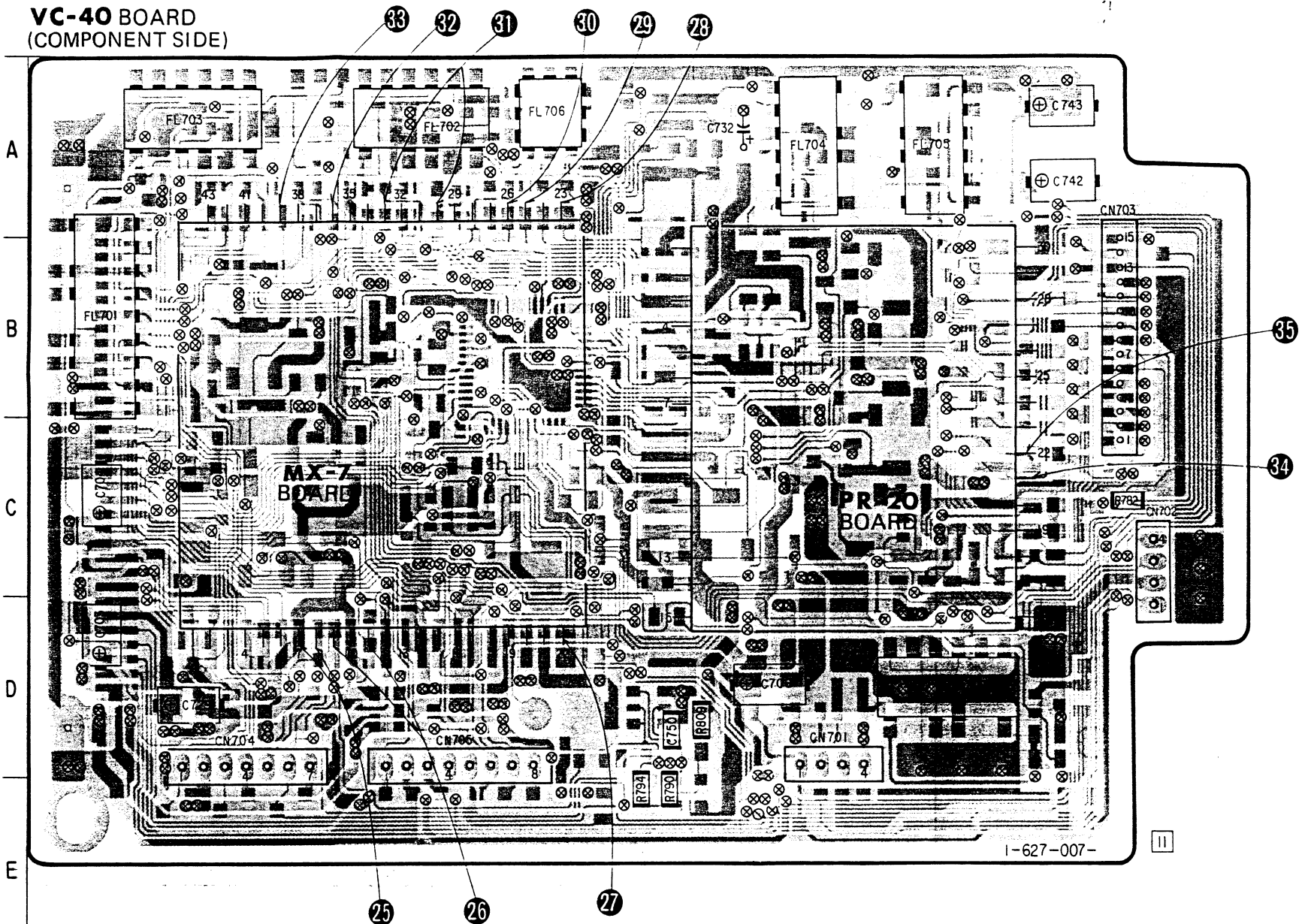
VC-40

VC-39

**VC-40 BOARD
(COMPONENT SIDE)**

VC-40 BOARD

CN701	D-5
CN702	C-7
CN703	A-7
CN704	D-2
CN705	D-3
D701	J-4
IC701	I-3
Q701	J-2
Q702	J-2
Q705	G-6
Q706	H-6
Q707	H-6
Q708	F-4
Q709	G-4
Q710	I-3
Q711	H-3
RV701	J-2
RV702	I-2
RV703	H-2
RV704	H-2
RV705	H-2
RV706	G-2
RV707	G-2
RV708	F-4
RV709	I-5
RV710	H-5
RV711	I-6
RV712	J-5
RV713	J-5
RV714	J-6
RV715	I-6
RV716	J-4
RV717	J-4
RV718	J-3
RV719	J-2
RV720	J-2
RV722	H-5
RV724	H-5

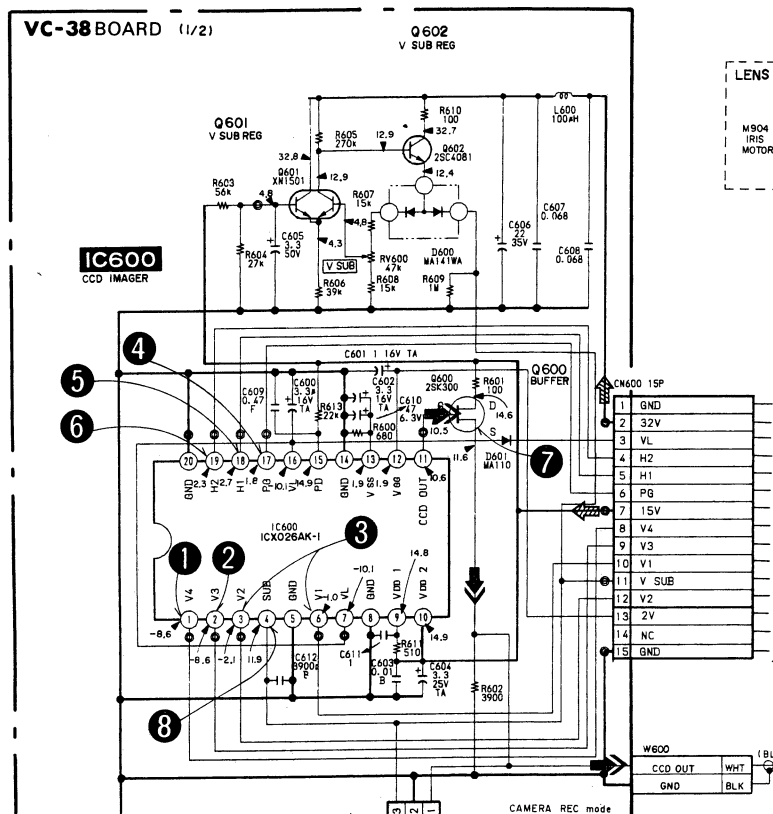


VC-38 (CCD IMAGER), VC-39 (TIMING/SYNC GENERATOR), VC-40 (CAMERA MATRIX, CAMERA ENCODER, TITLE MIX) SCHEMATIC DIAGRAM

— Ref. No. VC-38, VC-39, VC-40 BOARDS: 1,000 series —

Precautions for replacement of CCD imager block.

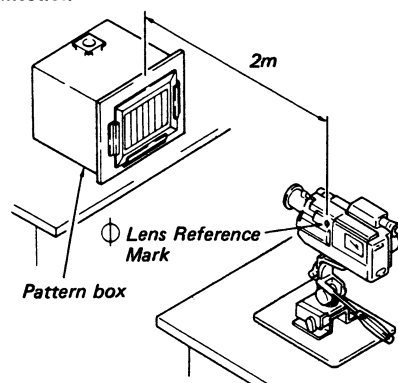
- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light receiving section and for strong light not to get into there.



TO VC-38 BOARD
(AUTO WHITE BALANCE)
BLOCK
(See page 90.)

- Voltage and waveform measuring conditions:
(1) Sample object: Pattern box color bars.
(2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection



- Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

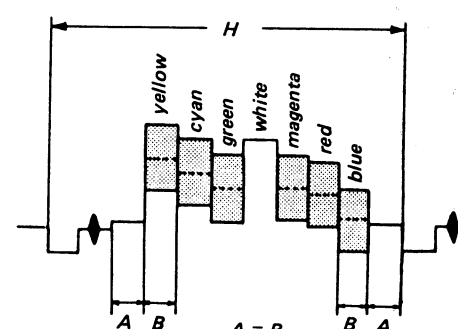


Fig. a Camera output waveform

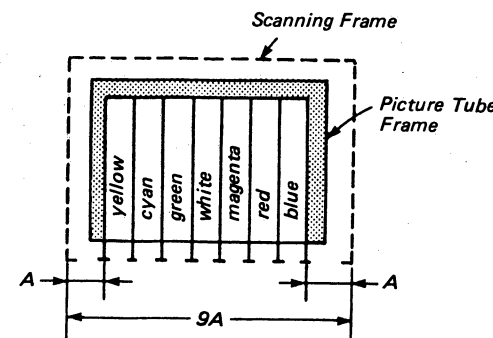
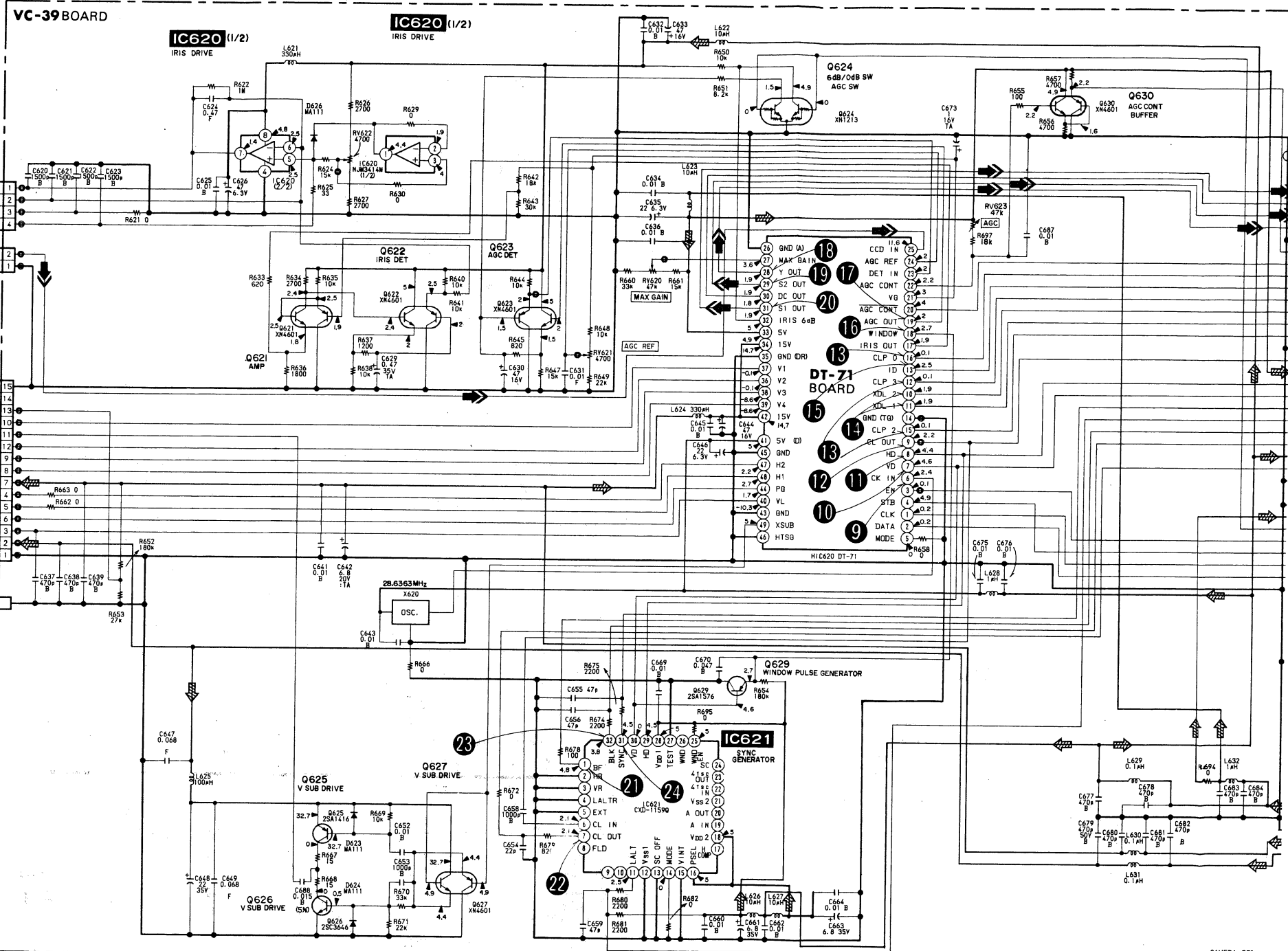
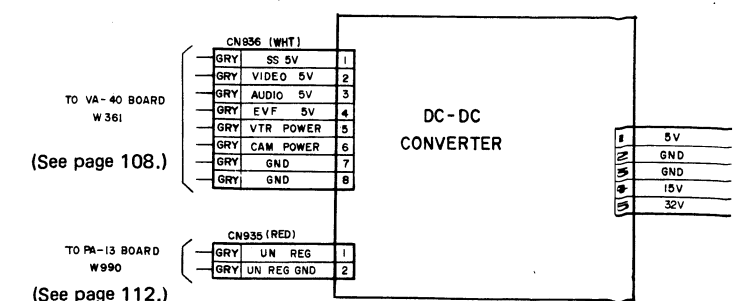


Fig. b Picture of TV monitor screen

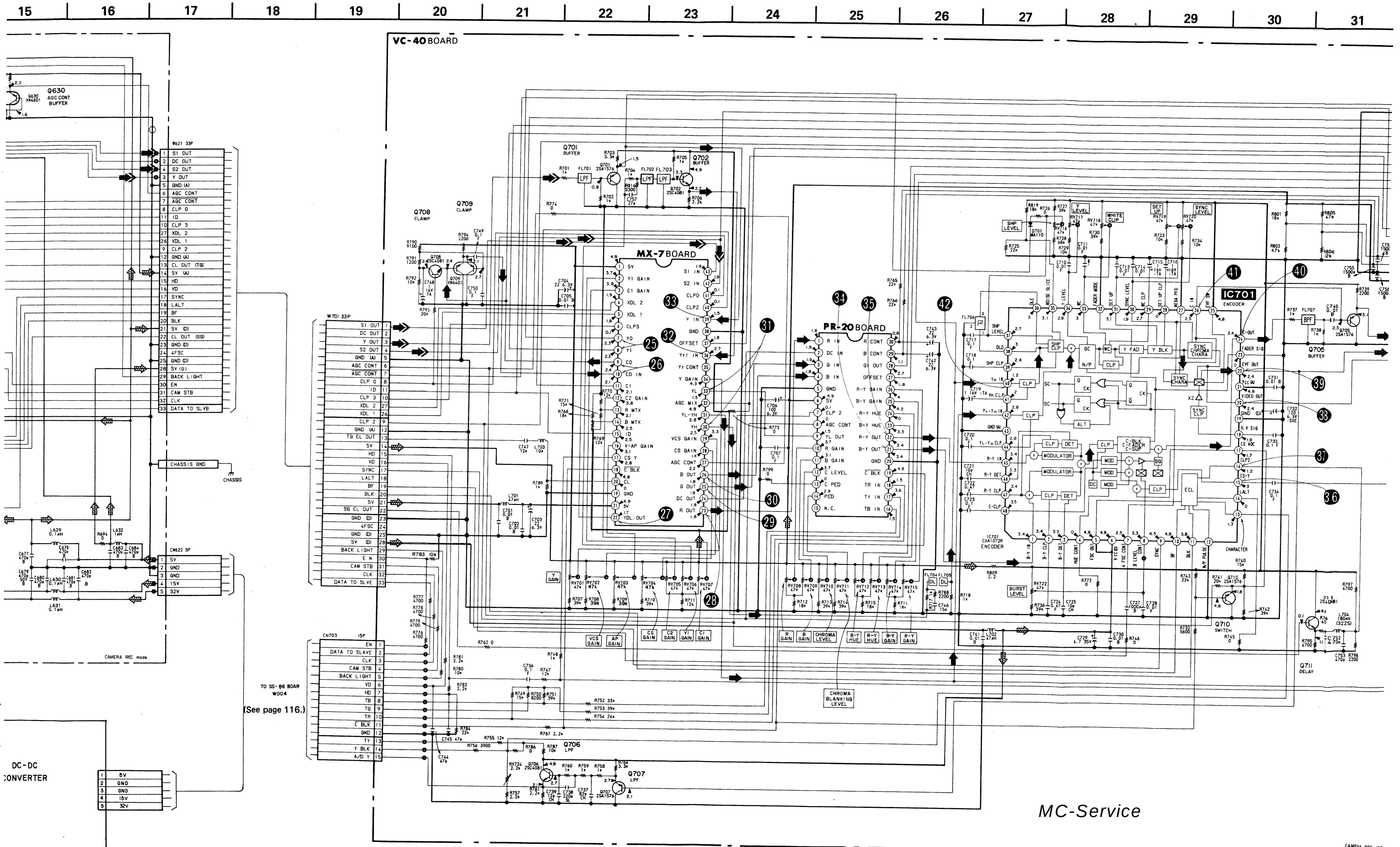


- Signal path
➡ : REC Y Signal
➡ : REC CHROMA Signal
➡ : REC Y/CHROMA Signal

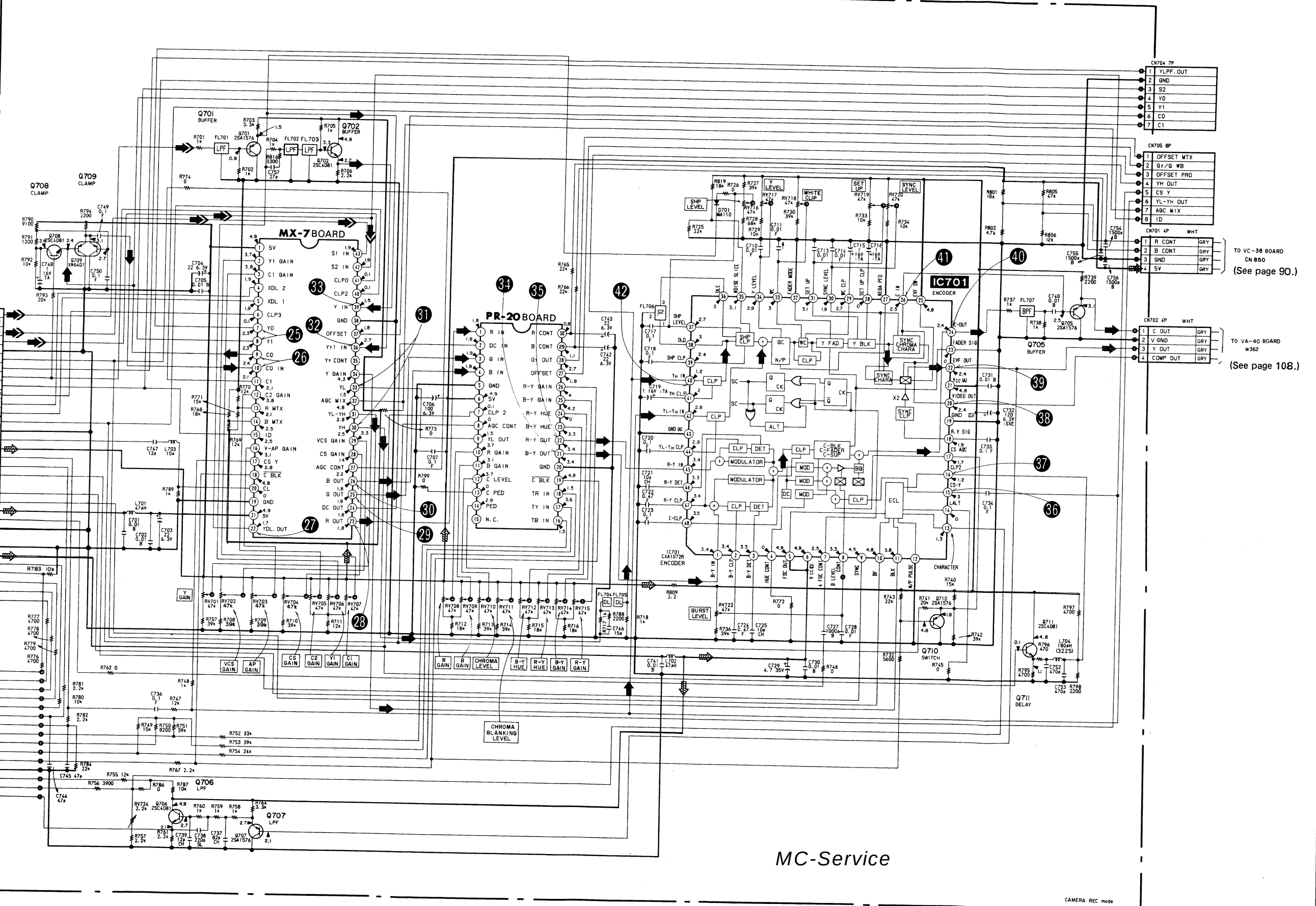
MC-Service



CAMERA(1)



CAMERA(1)



MC-Service

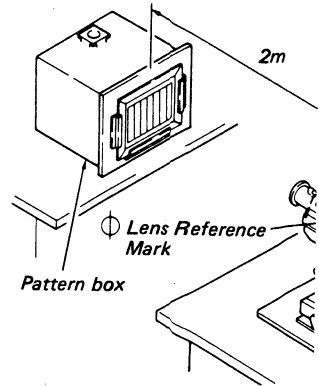
CAMERA REC mode

CAMERA(2) CAMERA(2)

Note on Schematic Diagram:

- Voltage and waveform measuring conc
 - (1) Sample object: Pattern box col
 - (2) Voltage values: Between measu
ground, measuri
multimeter (irr
or more).

1. Connection



2. Adjust the zooming of camera and the output waveform of Fig. a and t1 can be obtain.

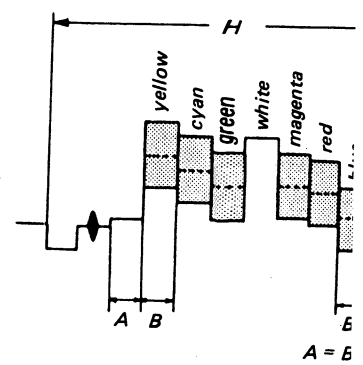


Fig. a Camera output wav

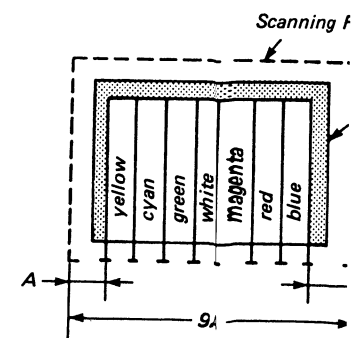


Fig. b Picture of TV monitor.

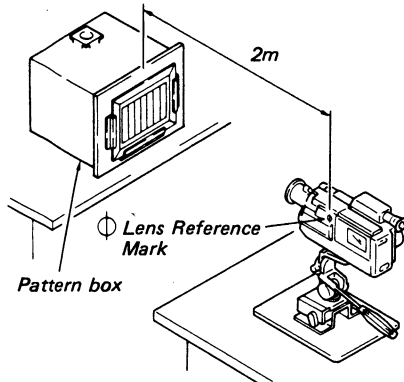
MC-Service

4-3. VC-38 (AUTO WHITE BALANCE) PRINTED WIRING BOARD
 - Ref. No. VC-38 BOARD: 1,000 series -

Note on Schematic Diagram:

- Voltage and waveform measuring conditions:
 (1) Sample object: Pattern box color bars.
 (2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection



2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

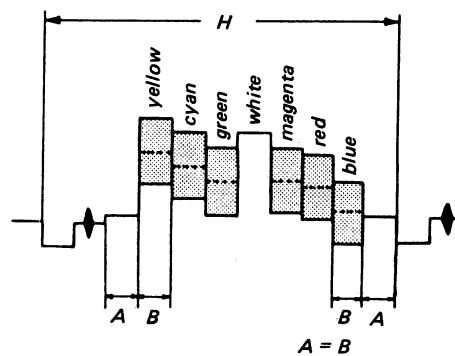


Fig. a Camera output waveform

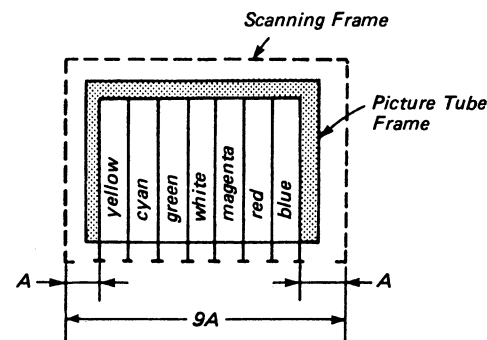


Fig. b Picture of TV monitor screen

Note on Printed Wiring Board:

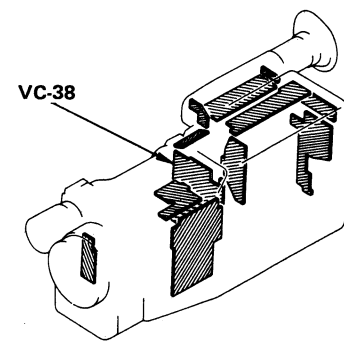
- ⊗ : Through hole.
- ■ : Pattern of the rear side.

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.

Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

- Digital transistor (VC-38: Q850, Q851, Q852, Q855, Q856, Q868, Q869) is transistor with resistor. Refer to the VC-38 board schematic diagram for digital transistor.

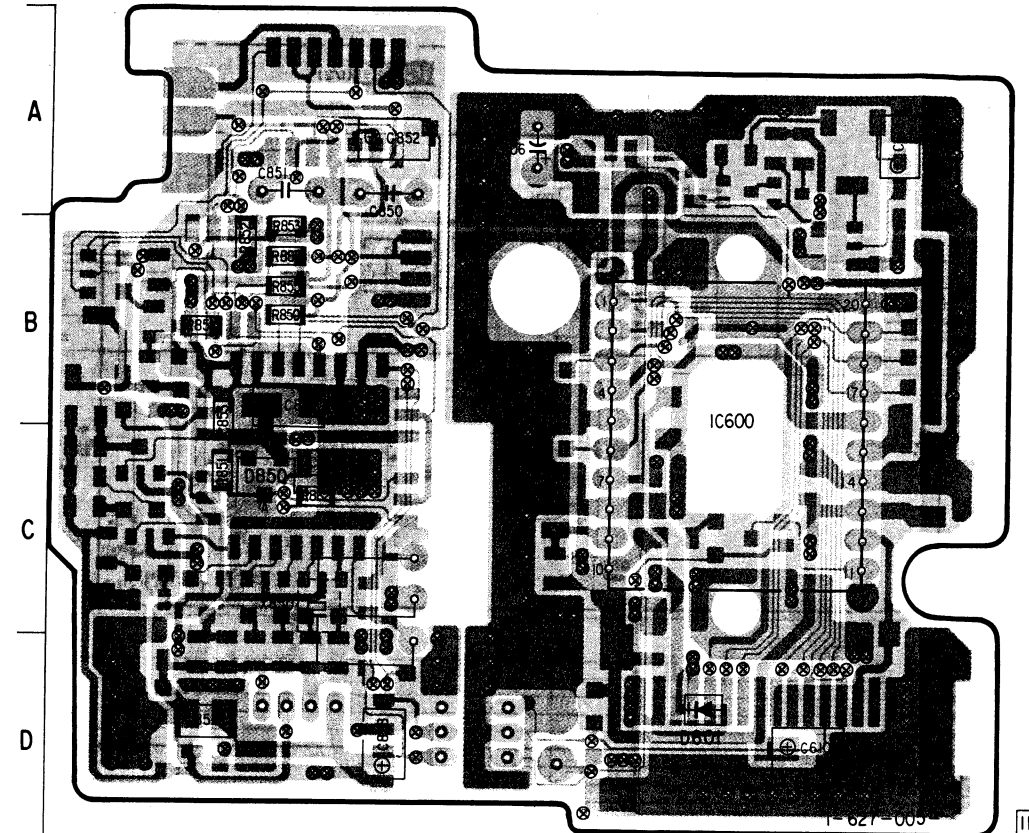


VC-38 BOARD

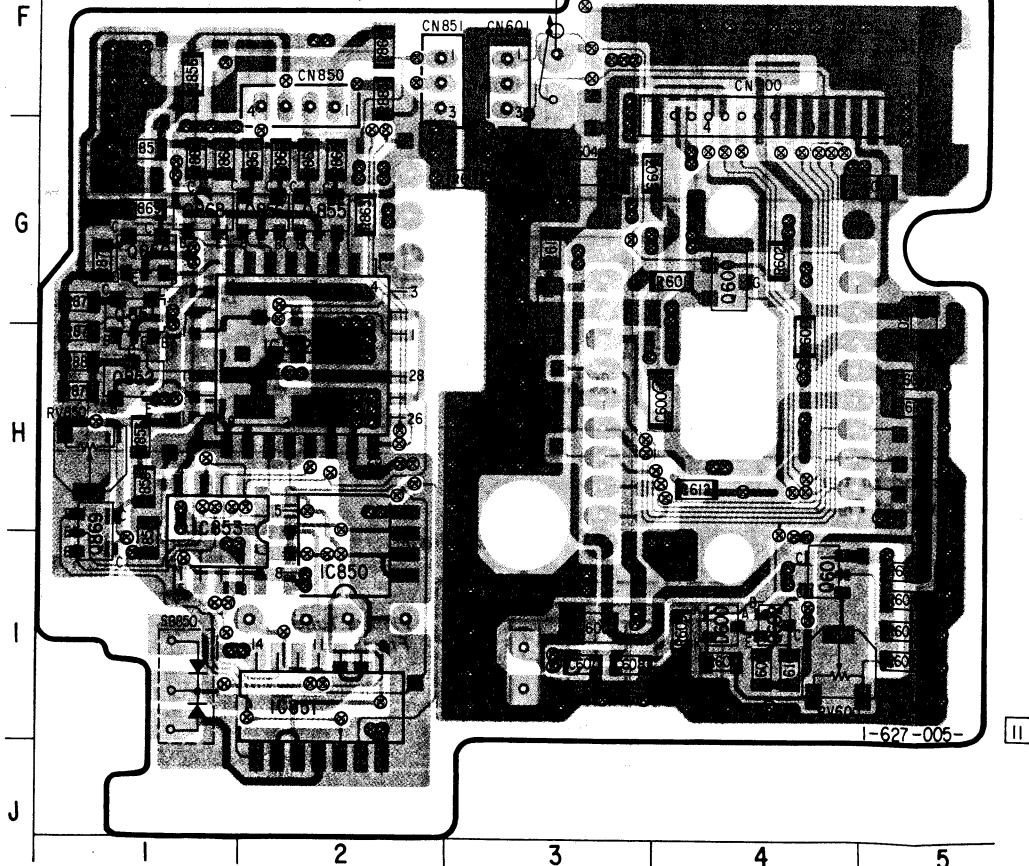
CN600	F-4
CN601	F-3
CN850	F-2
CN851	F-3
D600	I-4
D601	D-4
D850	C-2
IC850	I-2
IC851	I-2
IC852	H-2
IC853	I-2
Q600	G-4
Q601	I-4
Q602	I-4
Q850	G-1
Q851	G-1
Q852	H-1
Q855	G-2
Q856	G-2
Q868	G-1
Q869	H-1
RV600	I-4
RV850	H-1

CAMERA(2) CAMERA(2)

VC-38 BOARD (COMPONENT SIDE)



VC-38 BOARD (CONDUCTOR SIDE)



AF BLOCK UNIT

AF BOARD

CAMERA(2) CAMERA(2)

VC-38 BOARD (COMPONENT SIDE)

VC-38 BOARD

CN600	F-4
CN601	F-3
CN850	F-2
CN851	F-3
D600	I-4
D601	D-4
D850	C-2
IC850	I-2
IC851	I-2
IC852	H-2
IC853	I-2
Q600	G-4
Q601	I-4
Q602	I-4
Q850	G-1
Q851	G-1
Q852	H-1
Q855	G-2
Q856	G-2
Q868	G-1
Q869	H-1
RV600	I-4
RV850	H-1

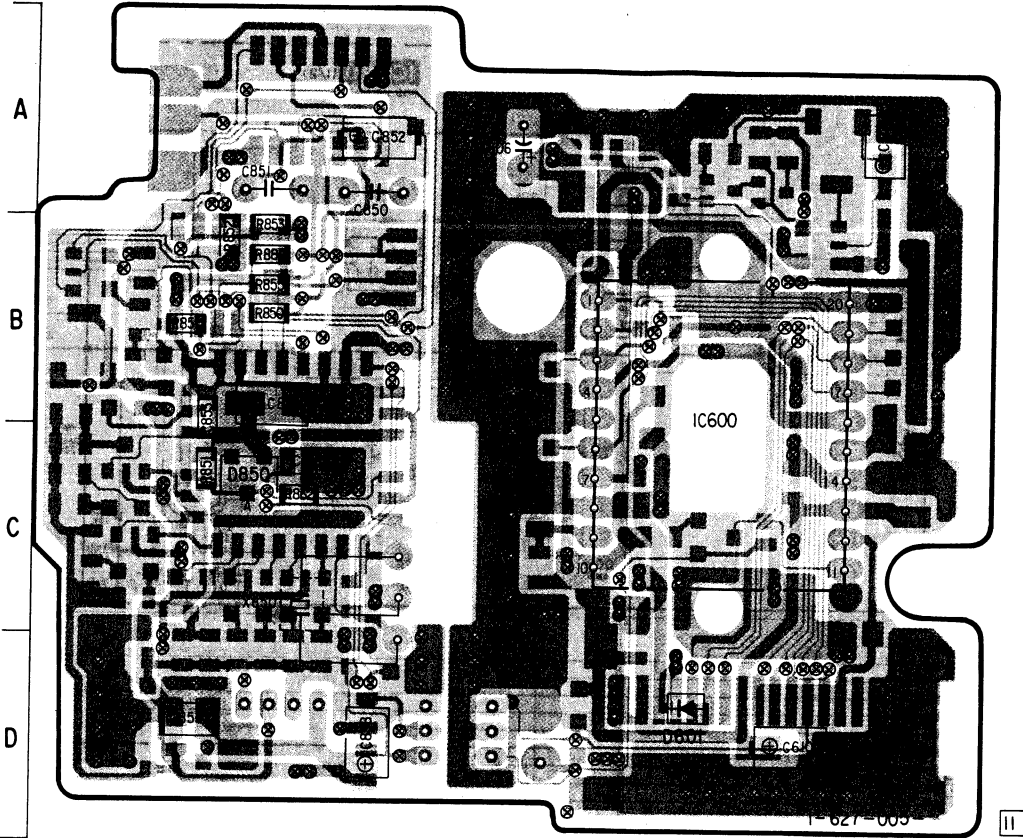
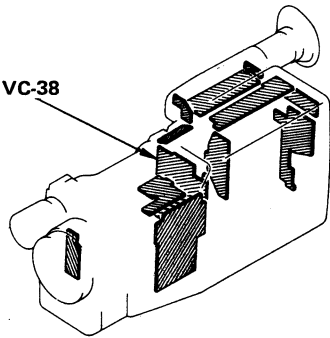
Note on Printed Wiring Board:

- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

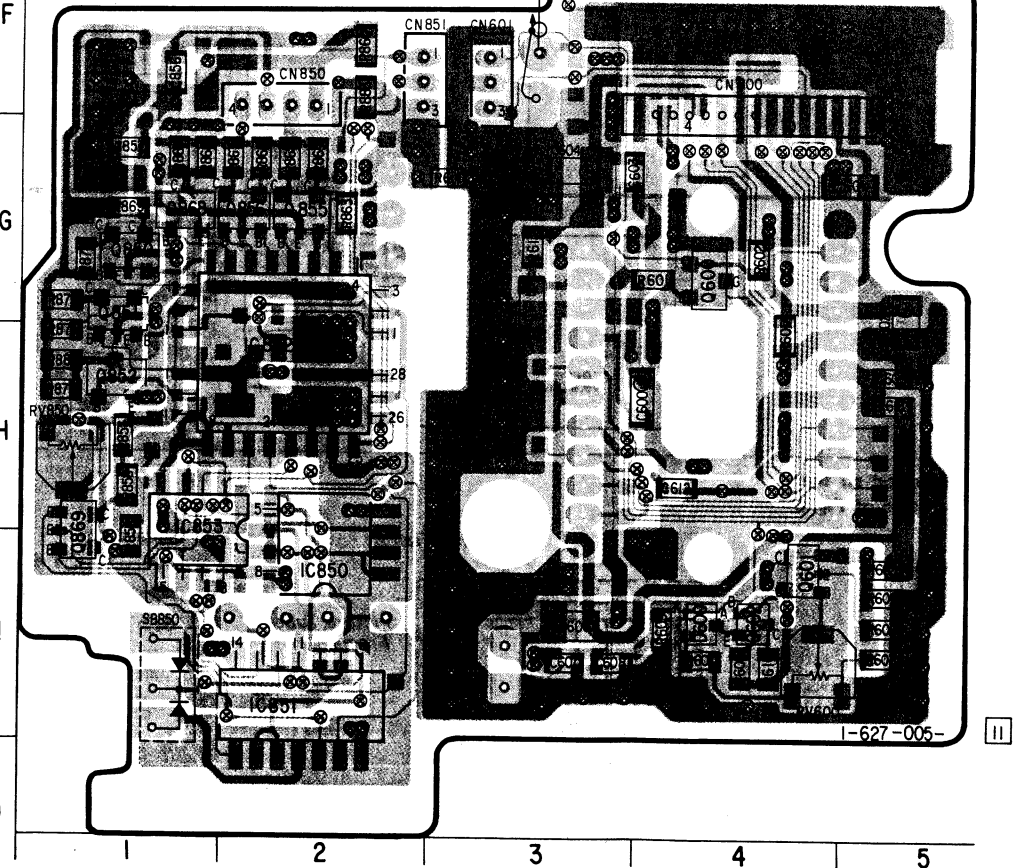
Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

- Digital transistor (VC-38: Q850, Q851, Q852, Q855, Q856, Q868, Q869) is transistor with resistor. Refer to the VC-38 board schematic diagram for digital transistor.



VC-38 BOARD (CONDUCTOR SIDE)



AF BLOCK UNIT

V +	BRN
A OUT	RED
VD	ORG
B OUT	YEL
V -	BLU

IRED -	BLK
IRED +	RED

AF BOARD

PUL4002 (BRN)	
1 IRED +	RED
2 IRED -	BLK
PUL4001 (WHT)	
1 V +	BRN
2 A OUT	RED
3 VD	ORG
4 B OUT	YEL
5 V -	BLU

PUL4003 (BRN)	
1 F. MOTOR +	M
2 F. MOTOR -	M

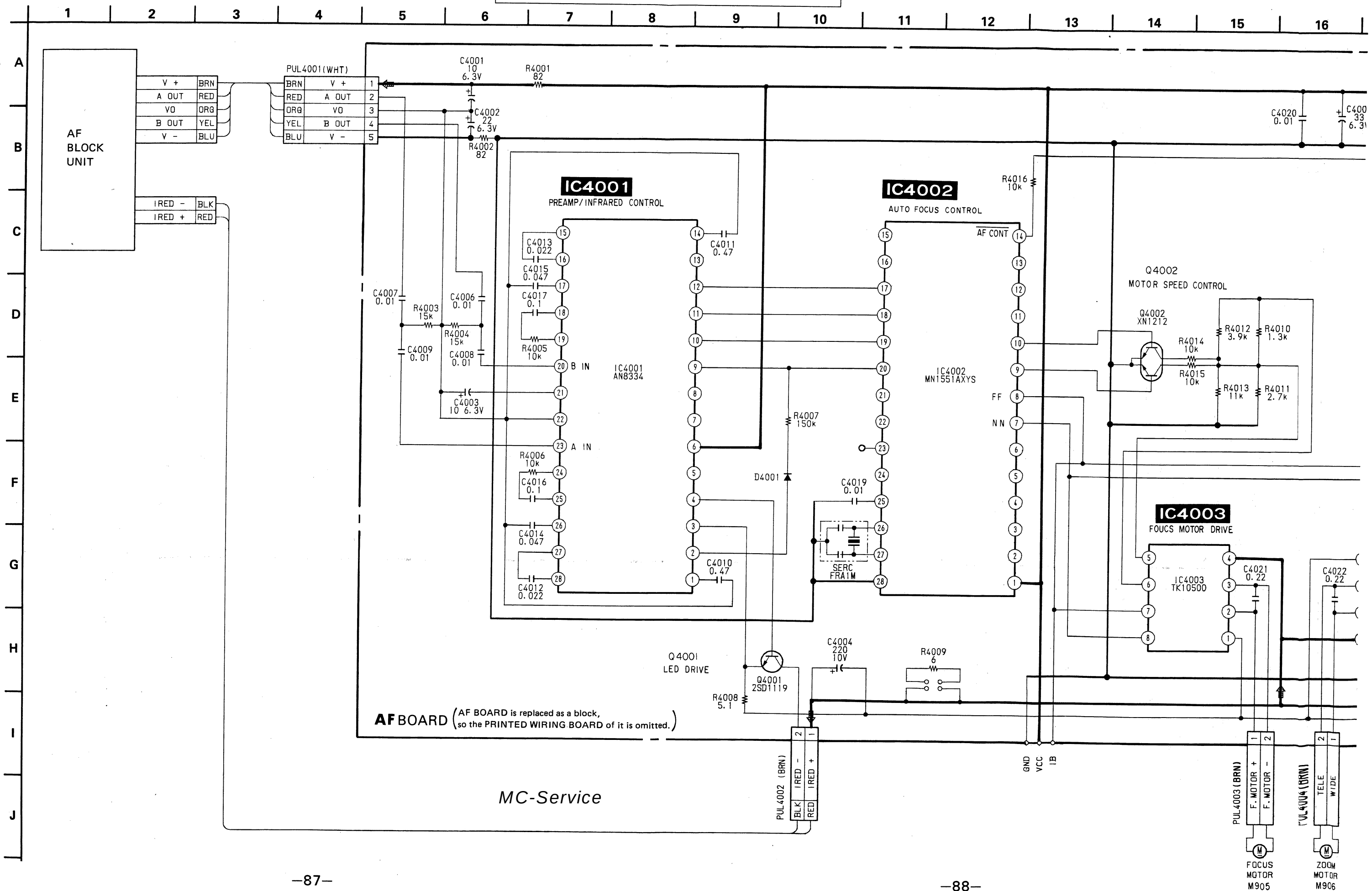
PUL4004 (BRN)	
1 WIDE	M
2 TELE	M

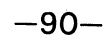
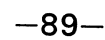
CN4005 (BRN)	
1 5V OUT	
2 W SW	
3 T SW	
4 AF GND	
5 AF CONT	
6 5V IN	
7 V BATT	
8 BATT GND	

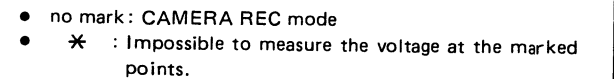
TO SS-86 BOARD CN005

MC-Service

CAMERA(2) CAMERA(2)





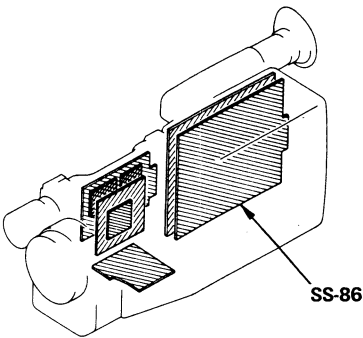


4-4. SS-86 (DIGITAL TITLER) PRINTED WIRING BOARD
- Ref. No. SS-86 BOARD: 2,000 series -

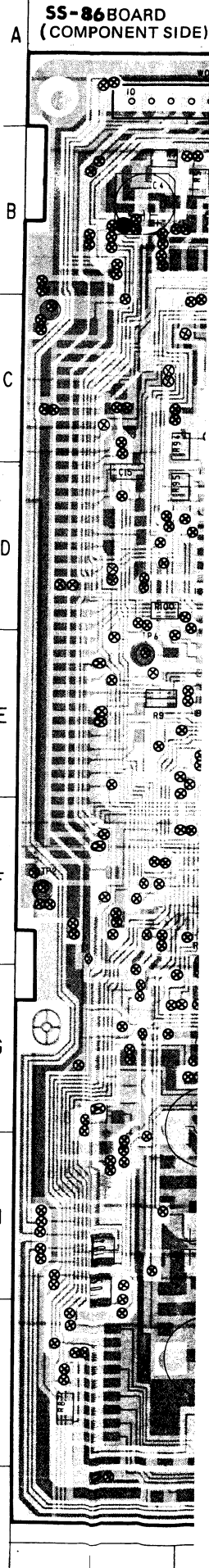
- Note:
- ⊗ : Through hole.
 - ▨ : Pattern of the rear side.

Caution:
Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

- Digital transistor (SS-86: Q203, Q204, Q205, Q206) is transistor with resistor.
Refer to the SS-86 board schematic diagram for digital transistor.

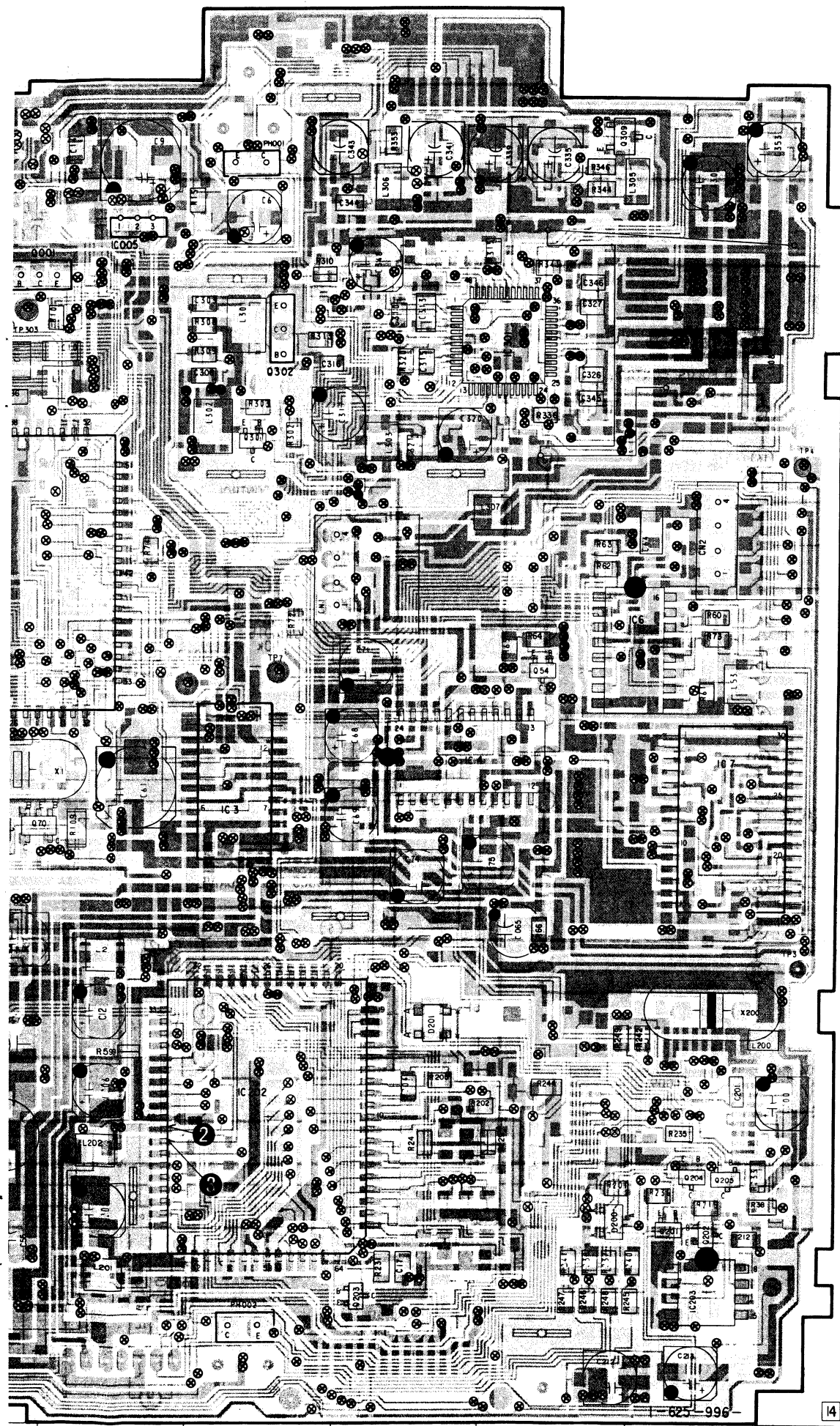


CN001	D-5	Q074	F-15
CN002	D-7	Q076	F-14
CN003	C-10	Q078	F-14
CN004	A-11	Q079	F-15
CN005	I-13	Q080	F-14
CN006	B-14	Q081	F-2
CN007	H-16	Q201	I-7
CT200	G-12	Q202	I-7
D003	E-15	Q203	I-5
D004	E-15	Q204	H-7
D050	I-15	Q205	H-7
D051	H-15	Q206	G-11
D200	I-6	Q301	C-4
D201	G-5	Q302	C-4
D203	G-11	Q303	C-13
		Q304	B-11
		Q306	C-11
		Q307	C-11
		Q308	A-10
		Q309	A-6
		Q310	A-11
		Q311	A-12
		Q312	A-12
		Q313	B-12
		Q314	B-12
		Q315	B-12
		Q316	A-12
		Q317	C-11
		Q318	C-11
		Q319	D-14
		Q321	E-15
IC001	D-2	RV001	C-14
IC002	B-15	RV002	D-15
IC003	F-4	RV003	C-15
IC004	F-5	RV200	I-9
IC005	B-3	RV301	A-9
IC006	E-6	RV302	B-9
IC007	F-7	RV306	A-12
IC200	H-10	TP001	C-1
IC201	H-12	TP002	F-1
IC202	H-4	TP003	G-8
IC203	I-7	TP004	D-7
IC301	C-6	TP005	G-7
Q001	B-2	TP006	E-1
Q002	B-15	TP007	E-4
Q005	B-13	TP008	E-3
Q006	G-15	TP303	C-23
Q007	E-10		
Q008	G-14		
Q051	H-15		
Q052	H-15		
Q053	F-2		
Q054	E-6		
Q055	F-2		
Q070	F-2		
Q071	F-15		
Q073	F-15		

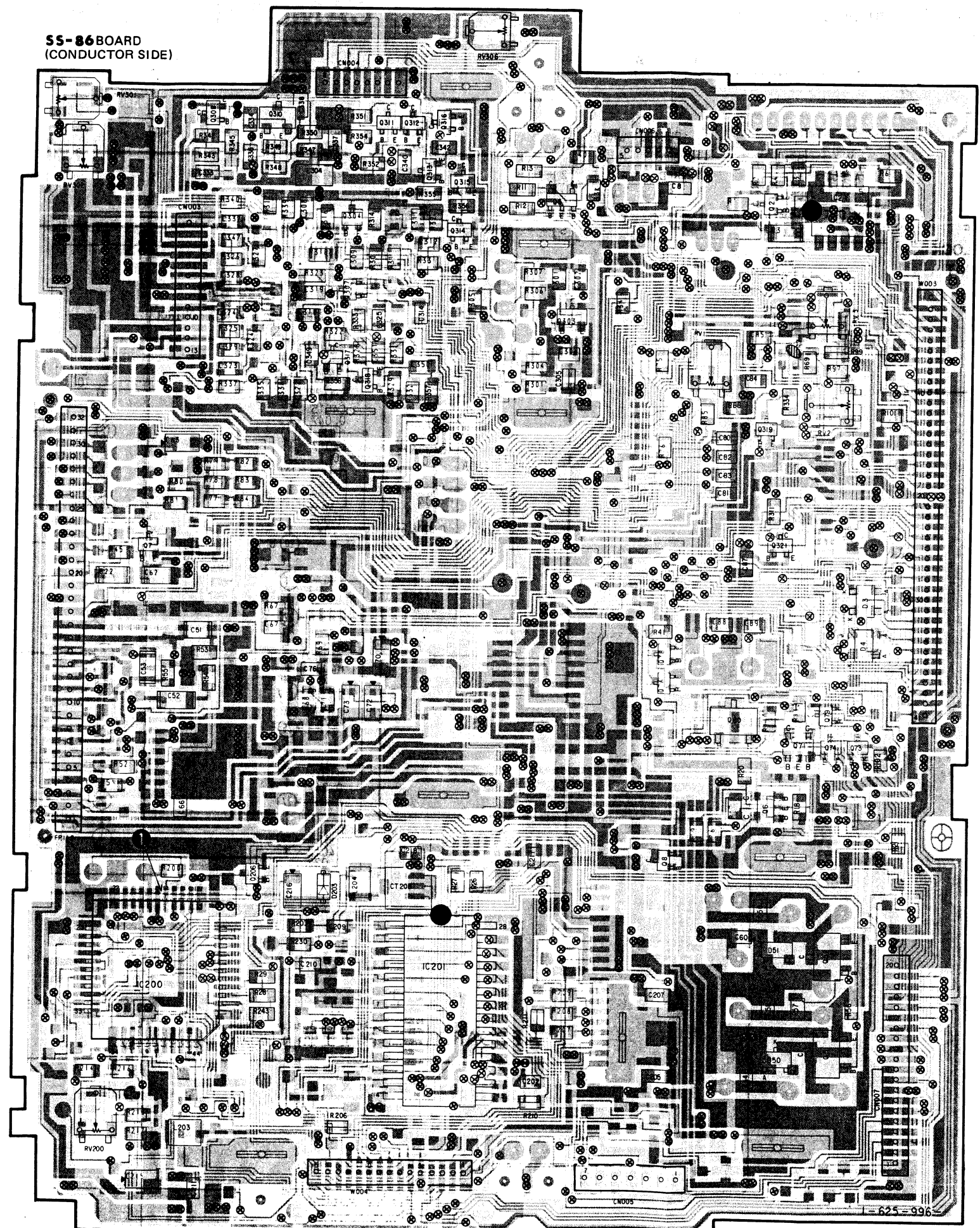


14

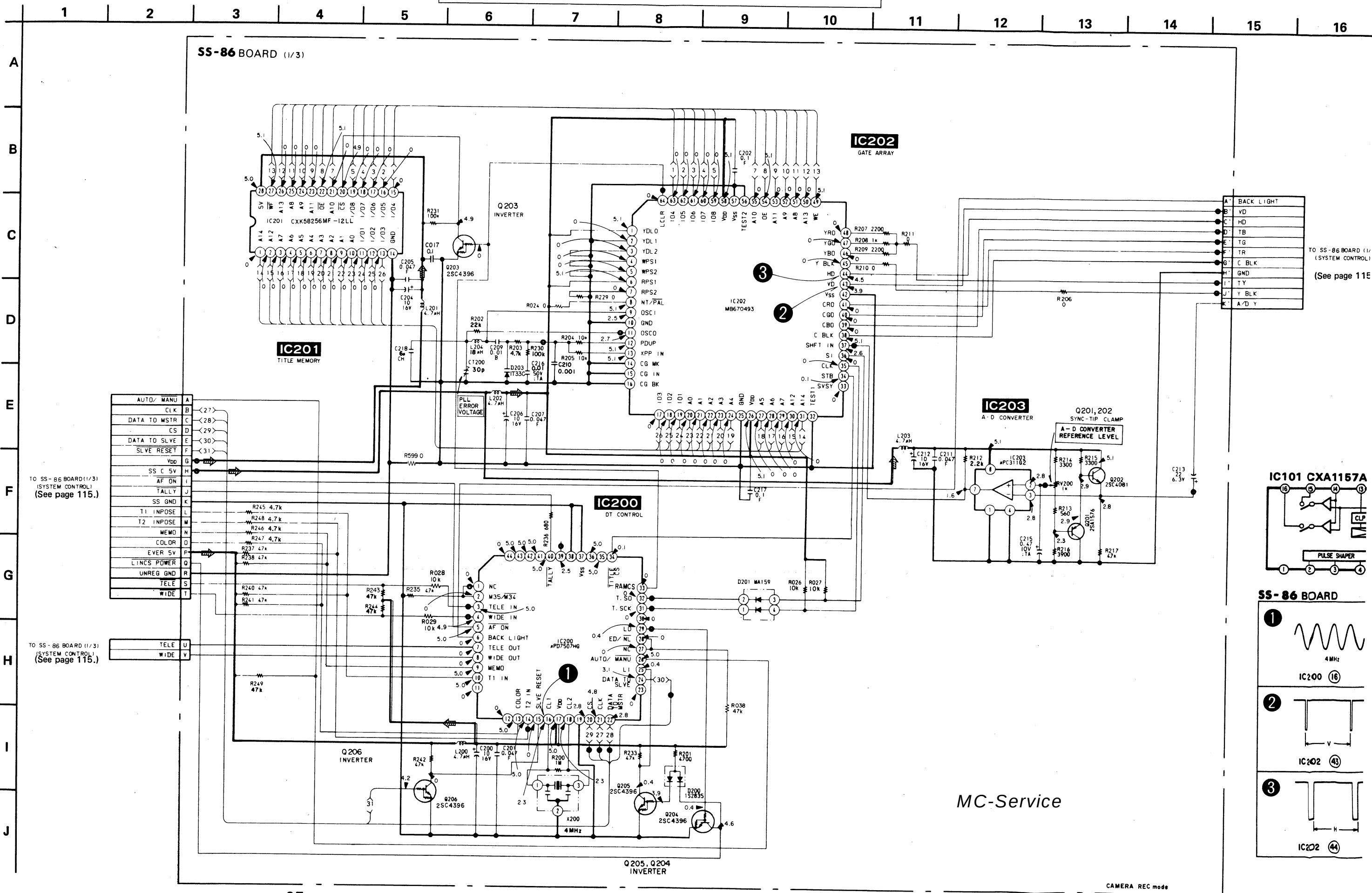
—96—



SS-86 BOARD
(CONDUCTOR SIDE)

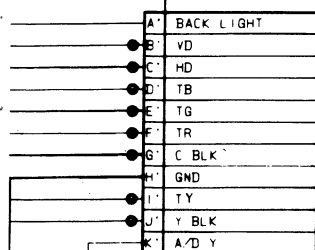


DIGITAL TITLER DIGITAL TITLER



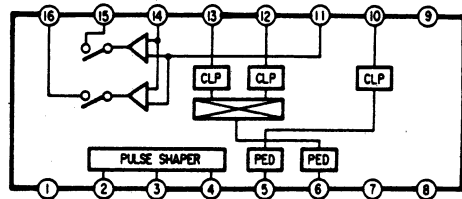
DIGITAL TITLER VIDEO, AUDIO

14 15 16 17

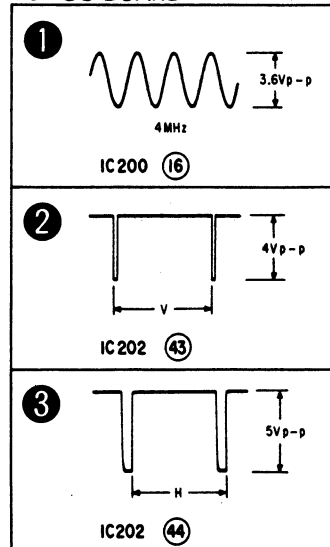


TO SS-86 BOARD (1/3)
(SYSTEM CONTROL)
(See page 115.)

IC101 CXA1157A



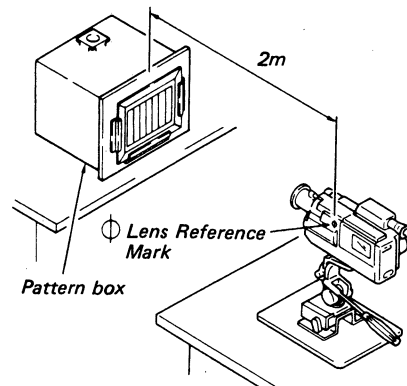
SS-86 BOARD



Note:

- Voltage and waveform measuring conditions:
(1) Sample object: Pattern box color bars.
(2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection



- Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

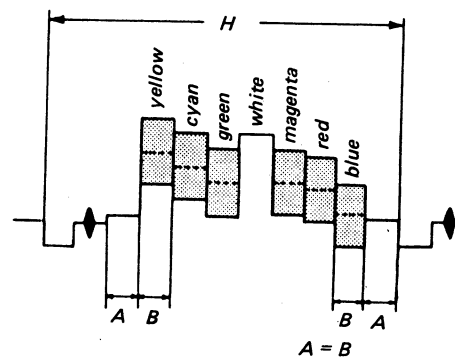


Fig. a Camera output waveform

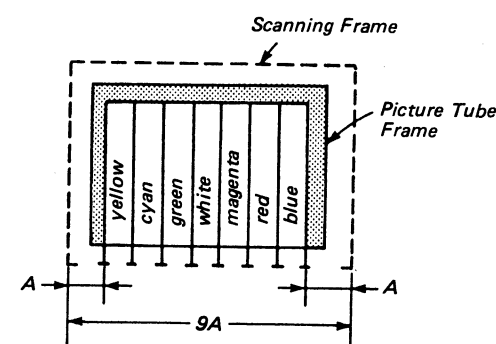
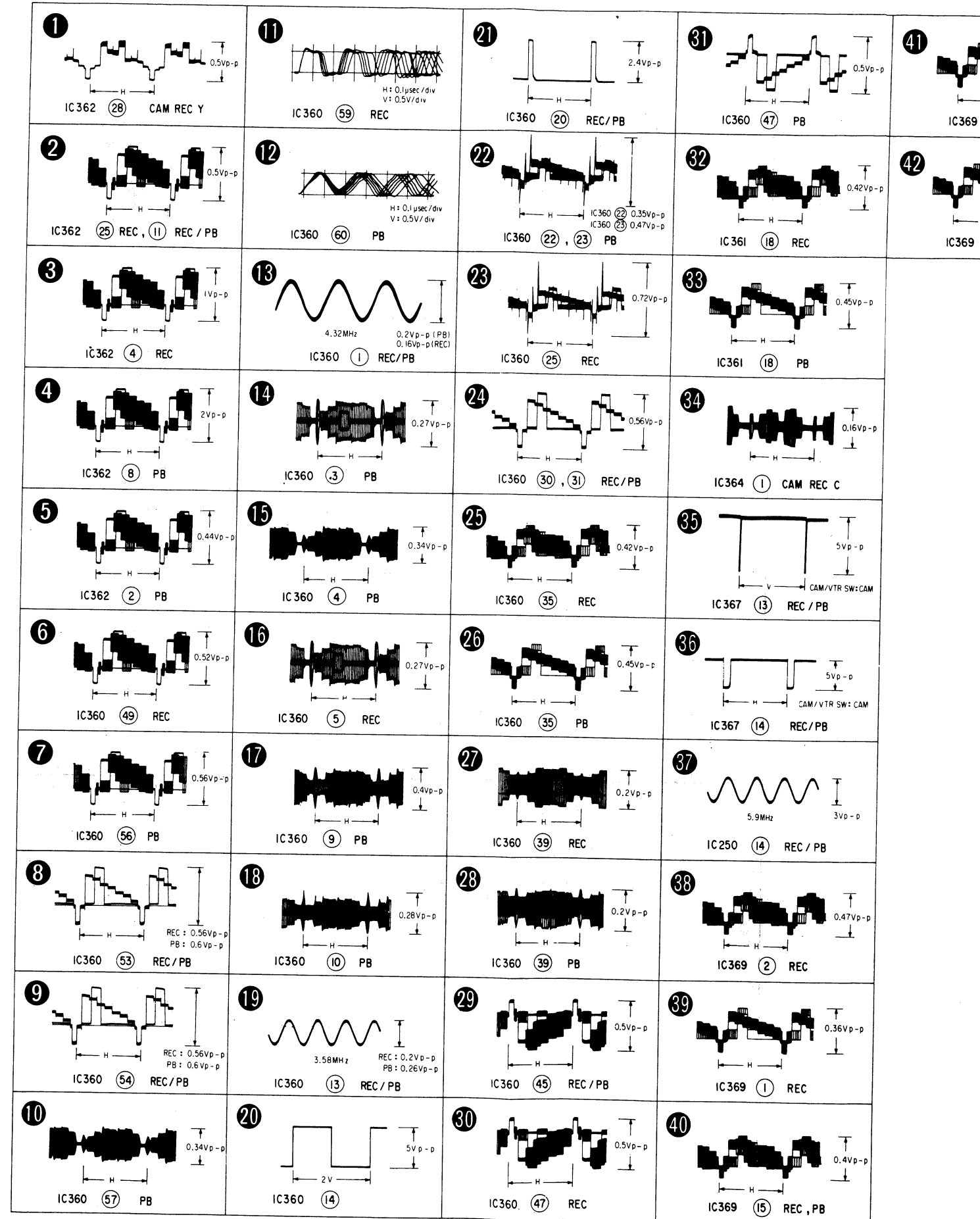


Fig. b Picture of TV monitor screen

VA-40 BOARD



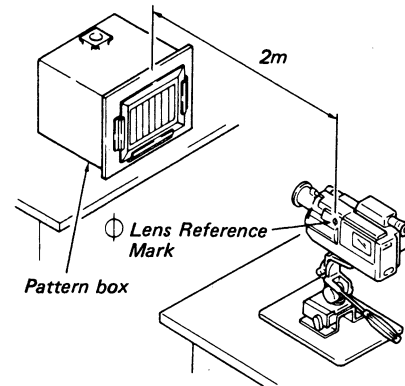
VA-40 BOARD

SS-86 BOARD

Note:

- Voltage and waveform measuring conditions:
- (1) Sample object: Pattern box color bars.
- (2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection



- Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

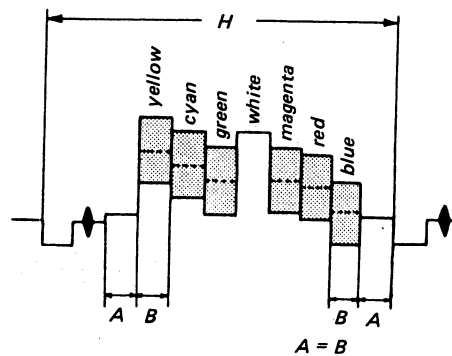


Fig. a Camera output waveform

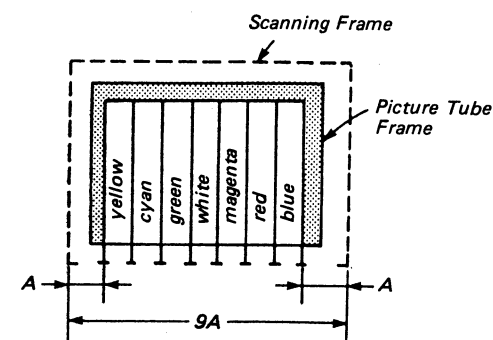
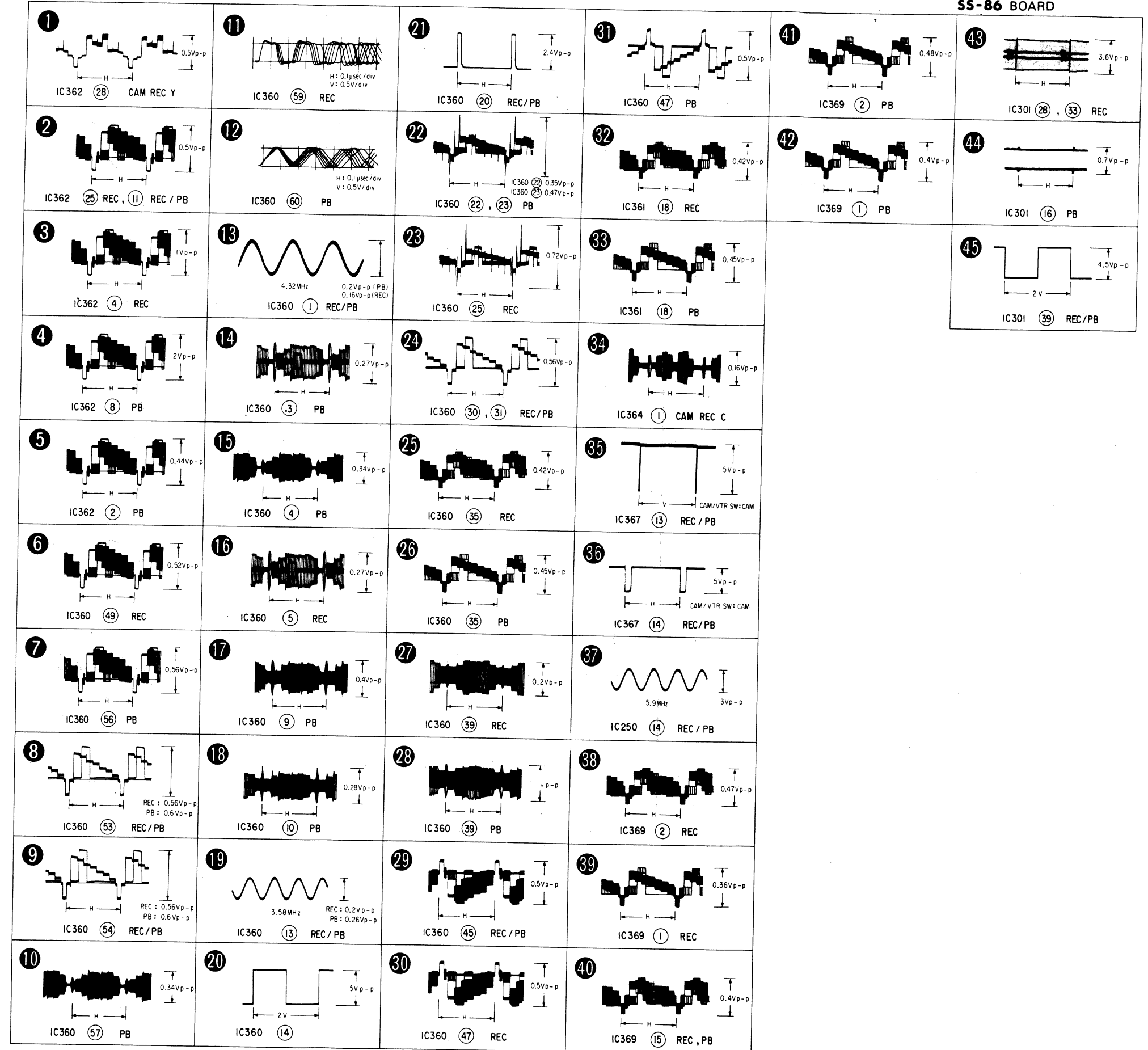


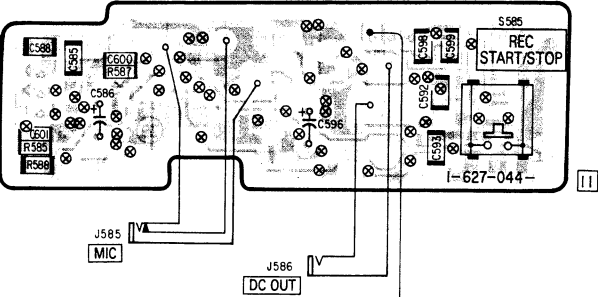
Fig. b Picture of TV monitor screen



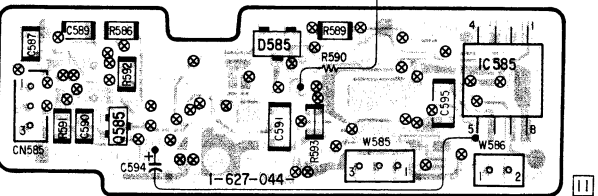
VIDEO, AUDIO

4-5. SS-86 (REC/PB AMP),
VA-40 (VIDEO/AUDIO SIGNAL
PROCESS),
MC-24 (MIC AMP, START/STOP
SWITCH)
PRINTED WIRING BOARDS
- Ref. No. SS-86, VA-40, MC-24
BOARDS: 2,000 series -

MC-24 BOARD (COMPONENT SIDE)



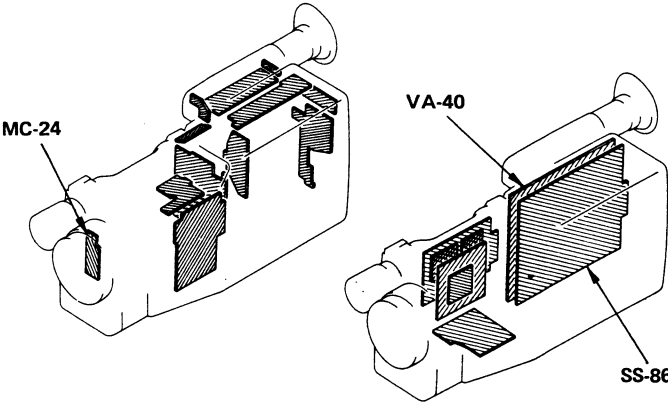
MC-24 BOARD (CONDUCTOR SIDE)



Note:
• ⊗ : Through hole.
• ■ : Pattern of the rear side.

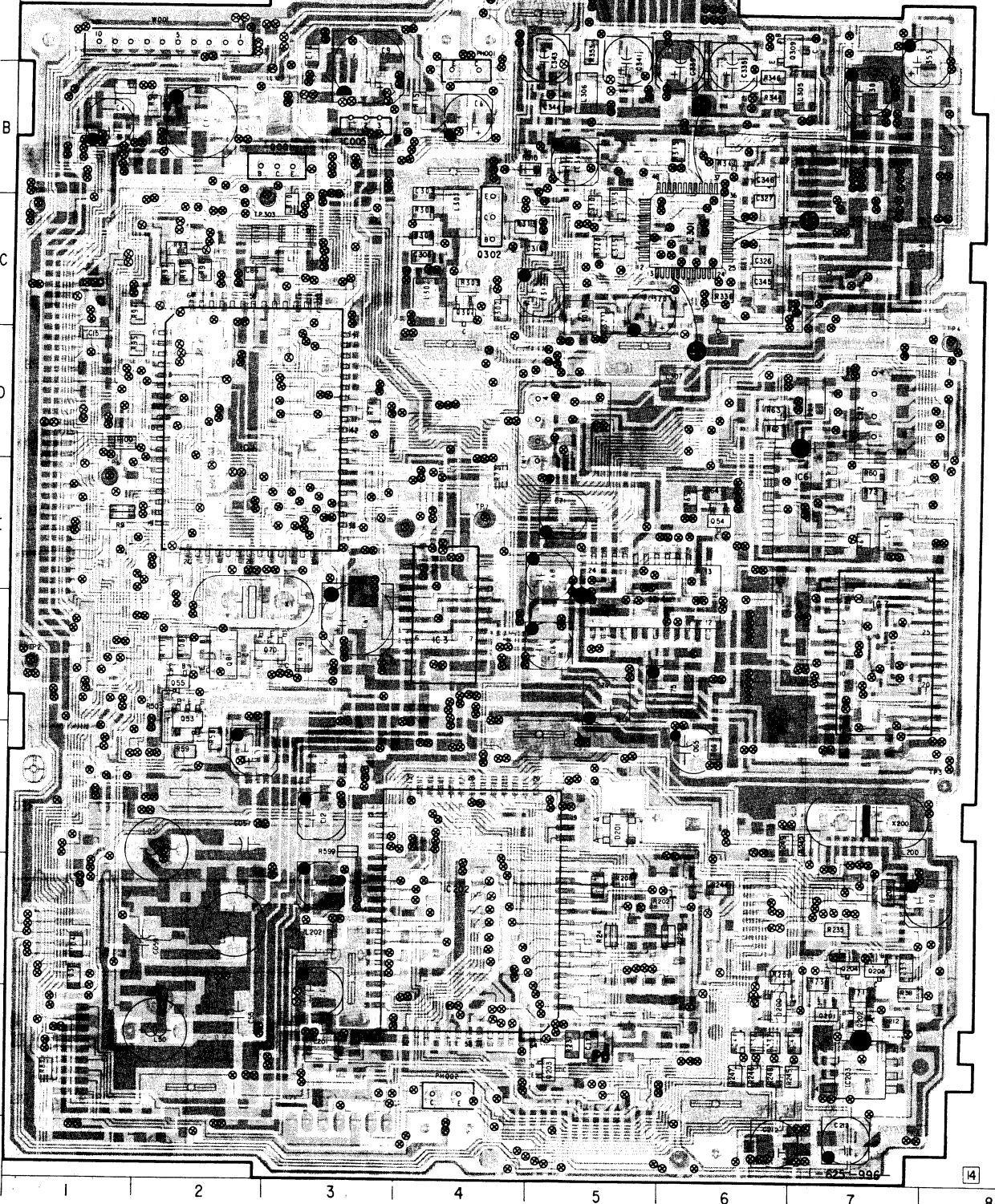
Caution:
Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

• Digital transistor (SS-86: Q304, Q307, Q308, Q314, Q315, Q316, Q319, VA-40: Q254, Q362, Q377, Q380, Q381, Q391, Q392, Q400, Q403, Q404, Q408, Q409, Q414, Q415, Q416, Q551) is transistor with resistor. Refer to the SS-86 and VA-40 boards schematic diagram for digital transistor.

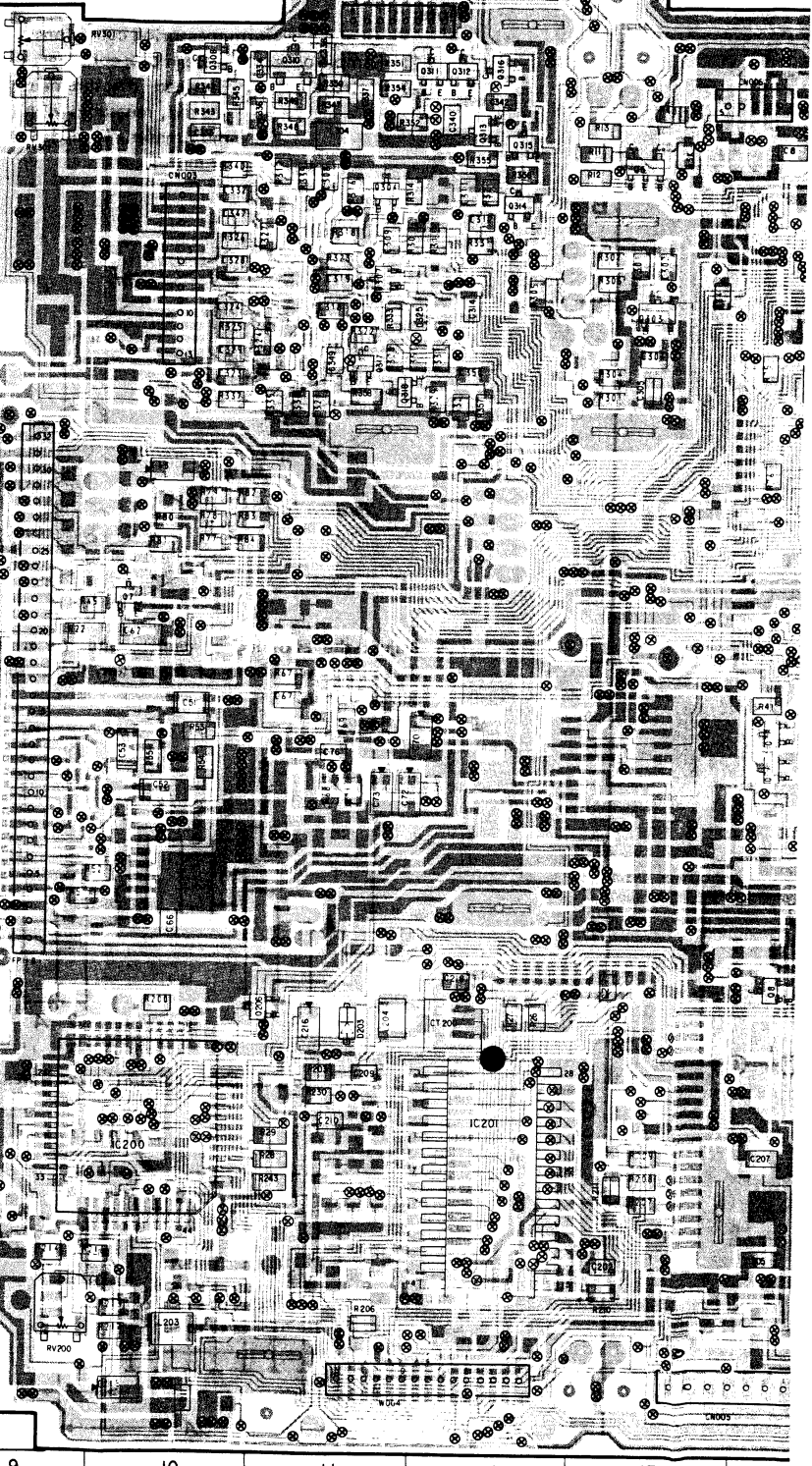


VIDEO, AUDIO VIDEO, AUDIO

SS-86 BOARD
(COMPONENT SIDE)

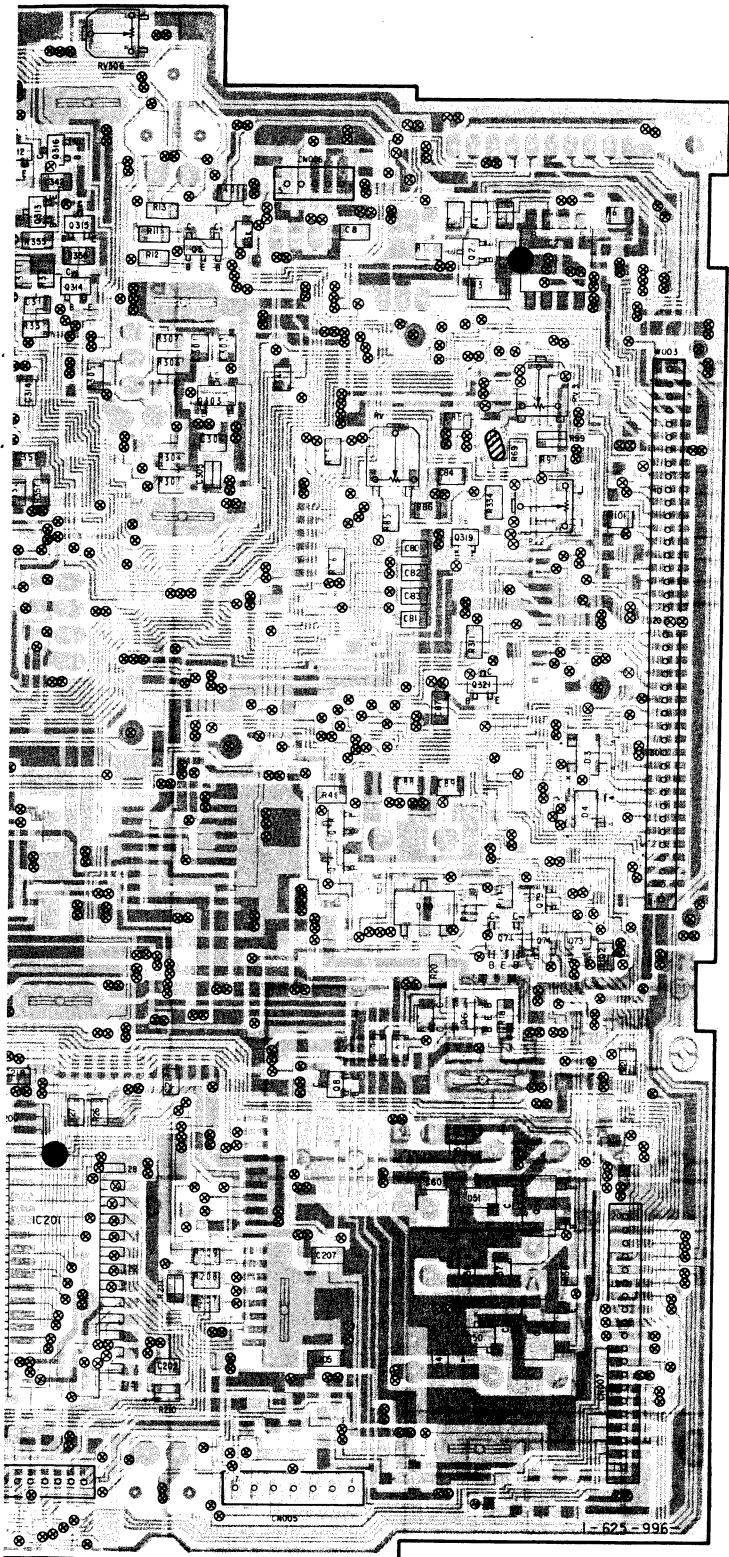


SS-86 BOARD
(CONDUCTOR SIDE)

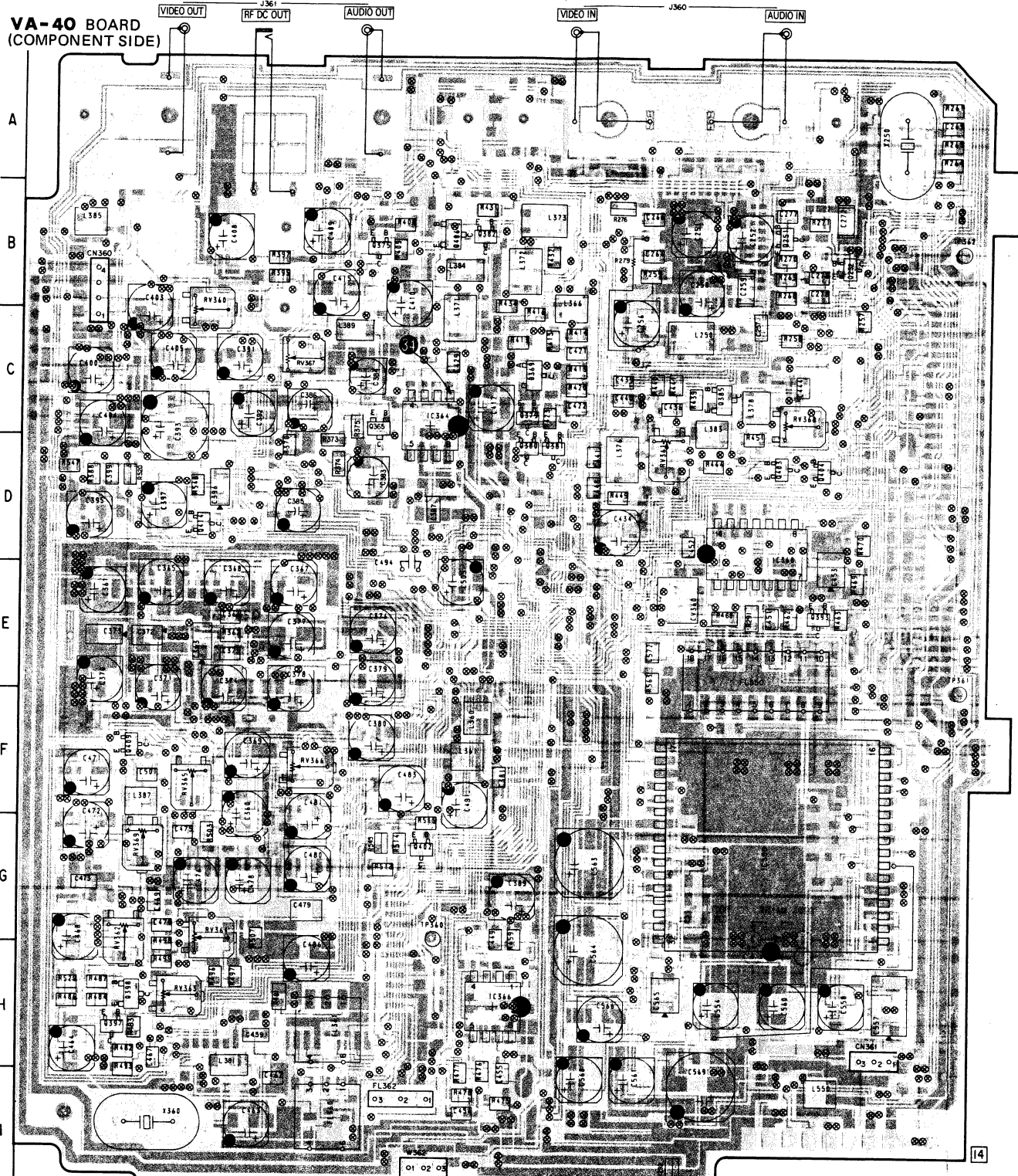


MC-Service

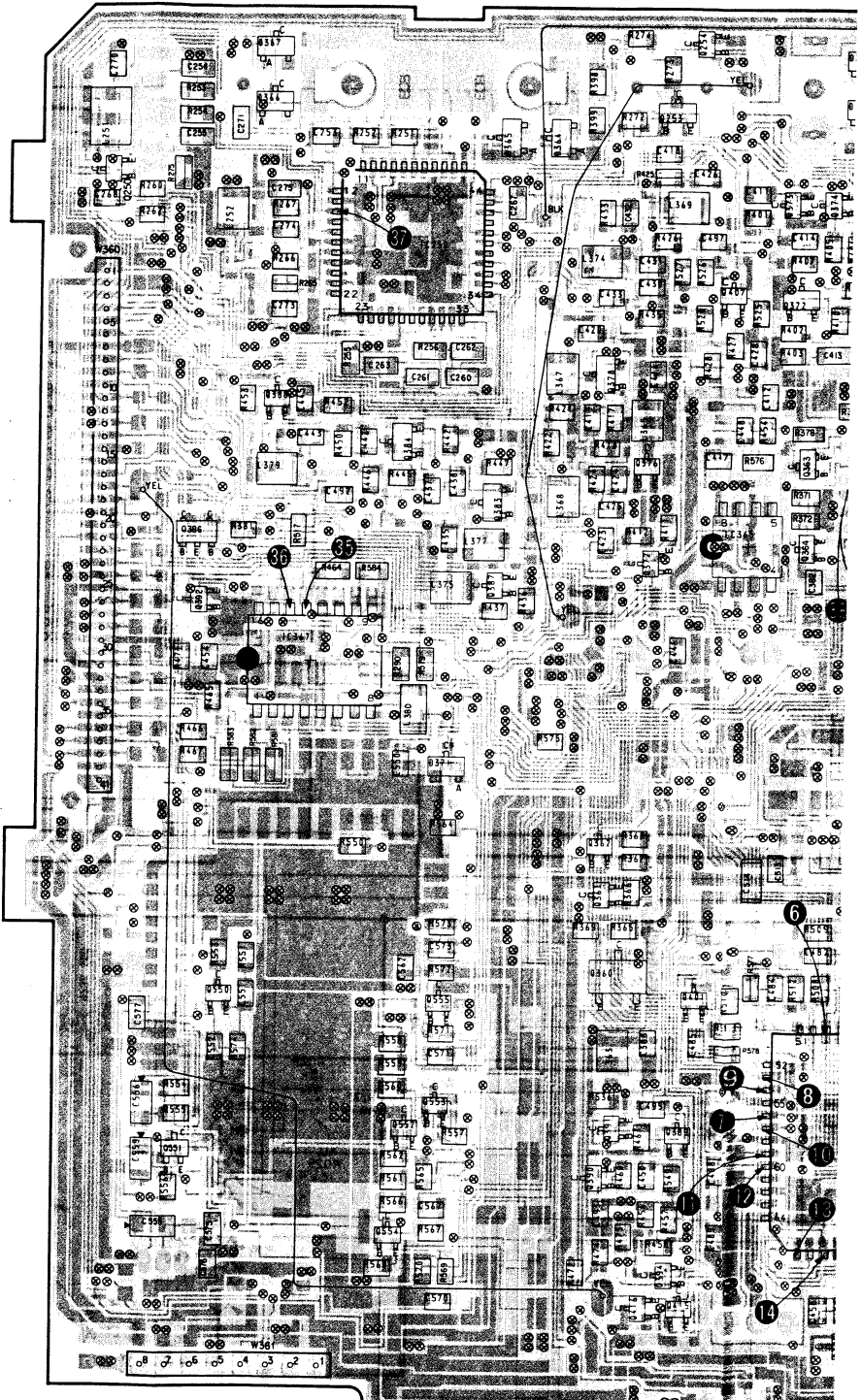
CN001	D-5	D051	H-14	IC202	G-4	Q055	F-2
CN002	D-7	D200	H-6	IC203	I-7	Q070	F-2
CN003	C-10	D201	G-5	IC301	C-6	Q071	F-15
CN004	A-11	D203	D-11			Q073	F-15
CN005	I-5					Q074	F-15
CN006	B-14	IC001	D-2	Q001	B-2		
CN007	H-16	IC002	B-15	Q002	B-14	Q066	F-14
		IC003	F-4	Q005	B-13	Q067	F-14
		IC004	F-5	Q006	G-14	Q068	F-15
		IC005	B-3	Q007	E-10	Q069	F-14
D001	I-14	IC006	E-6	Q008	G-14	Q070	F-2
D003	E-15			Q051	H-15	Q071	H-7
D004	F-15			Q052	H-15	Q072	I-7
D007	E-10	IC200	H-10	Q053	G-2	Q073	I-5
D008	I-14	IC201	H-12	Q054	E-6	Q074	H-7
D050	H-15						



VA-40 BOARD
(COMPONENT SIDE)



VA-40 BOARD (CONDUCTOR SIDE)



IC202	G-4	Q055	F-2	Q205	H-7	RV003	C-15
IC203	I-7	Q070	F-2	Q206	G-10	RV200	I-9
IC301	C-6	Q071	F-15	Q301	D-4	RV301	A-9
		Q073	F-15	Q302	C-4	RV302	B-9
		Q074	F-15	Q303	C-13		
Q001	B-2			Q304	C-11	TP001	C-1
Q002	B-14			Q306	C-11	TP002	F-1
Q005	B-13	Q076	F-14	Q307	C-11	TP003	C-3
Q006	G-14	Q078	F-14	Q317	C-11	TP004	D-7
Q007	E-10	Q079	F-15	Q318	D-11	TP005	G-7
Q008	G-14	Q080	F-14	Q319	D-14	TP006	E-1
Q051	H-15	Q081	F-2	Q320	C-5	TP007	E-4
Q052	H-15	Q201	H-7			TP008	E-3
Q053	G-2	Q202	I-7				
Q054	E-6	Q203	I-5	RV001	C-14		
		Q204	H-7	RV002	D-15		

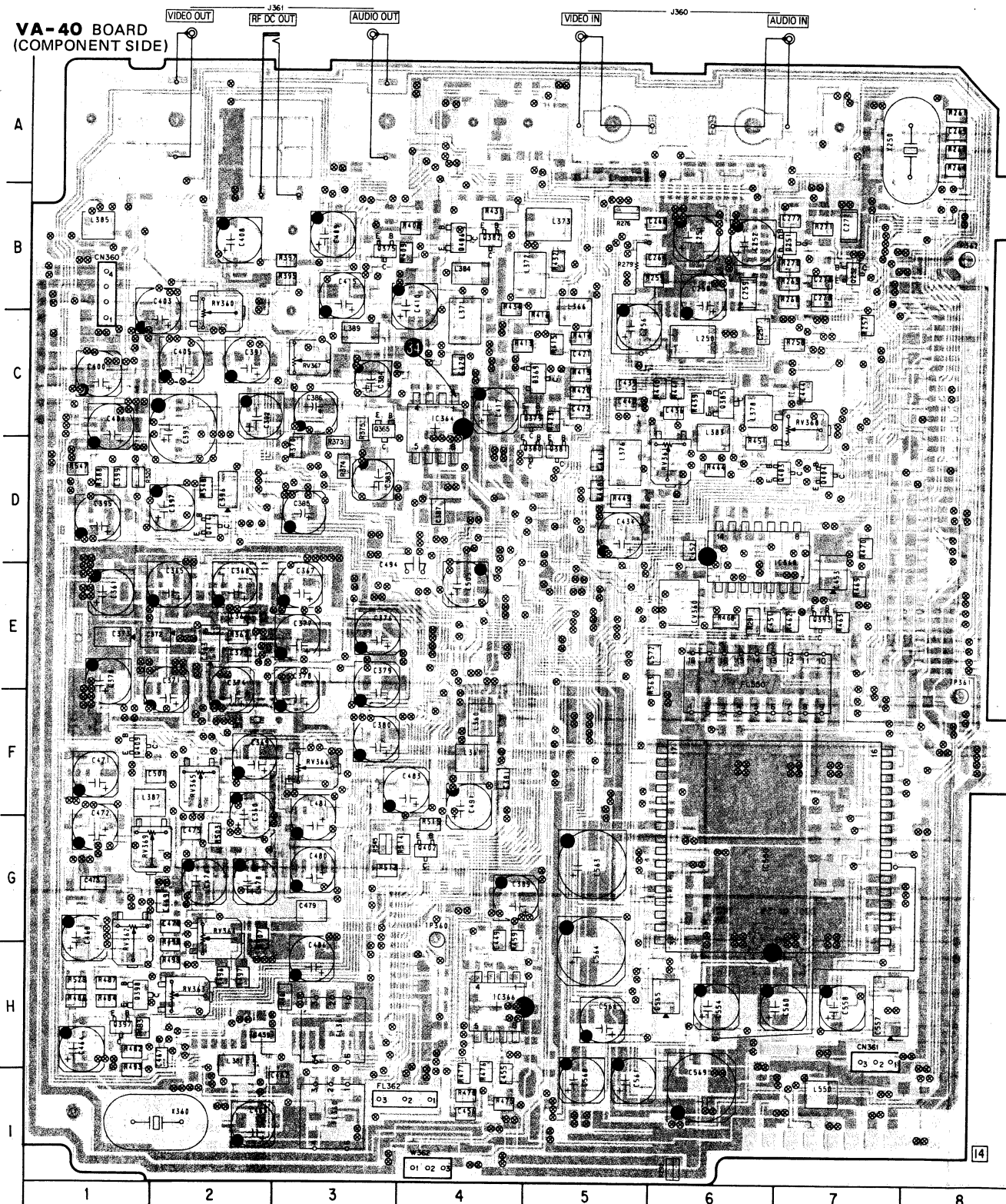
CN360	B-1	D370	H-16	Q250	B-9	Q369	B-15	Q383	D-12	Q396	H-16
CN361	H-7	D371	E-12	Q251	B-7	Q370	B-15	Q384	C-11	Q397	H-1
		D373	B-15	Q252	B-7	Q371	B-16	Q385	C-6	Q398	H-1
CV360	E-6	IC250	B-11	Q253	A-13	Q372	B-14	Q386	D-10	Q399	H-16
		IC360	H-15	Q254	A-13	Q373	B-14	Q387	D-12	Q400	F-15
D-360	A-16	IC361	E-15	Q360	G-13	Q374	B-14	Q388	C-10	Q401	G-13
D361	A-16	IC362	C-16	Q361	F-13	Q375	B-3	Q389	H-13	Q402	G-4
D362	A-14	IC364	C-4	Q362	F-13	Q376	C-13	Q390	H-13	Q403	D-7
D363	A-14	IC365	D-13	Q363	C-14	Q377	D-13	Q391	H-13	Q404	D-7
D364	A-12	IC366	H-4	Q364	D-14	Q378	C-13	Q392	D-10	Q405	B-16
D365	A-12	IC367	E-11	Q365	C-3	Q379	C-5	Q393	E-7	Q406	B-4
D366	A-10	IC368	D-6	Q366	D-15	Q380	D-5	Q394	H-13	Q407	B-13
D367	A-10	IC369	D-14	Q367	D-15	Q381	D-5	Q395	I-14	Q408	F-16
D369	C-5	IC550	G-6	Q368	C-15	Q382	B-4				

MC-Service

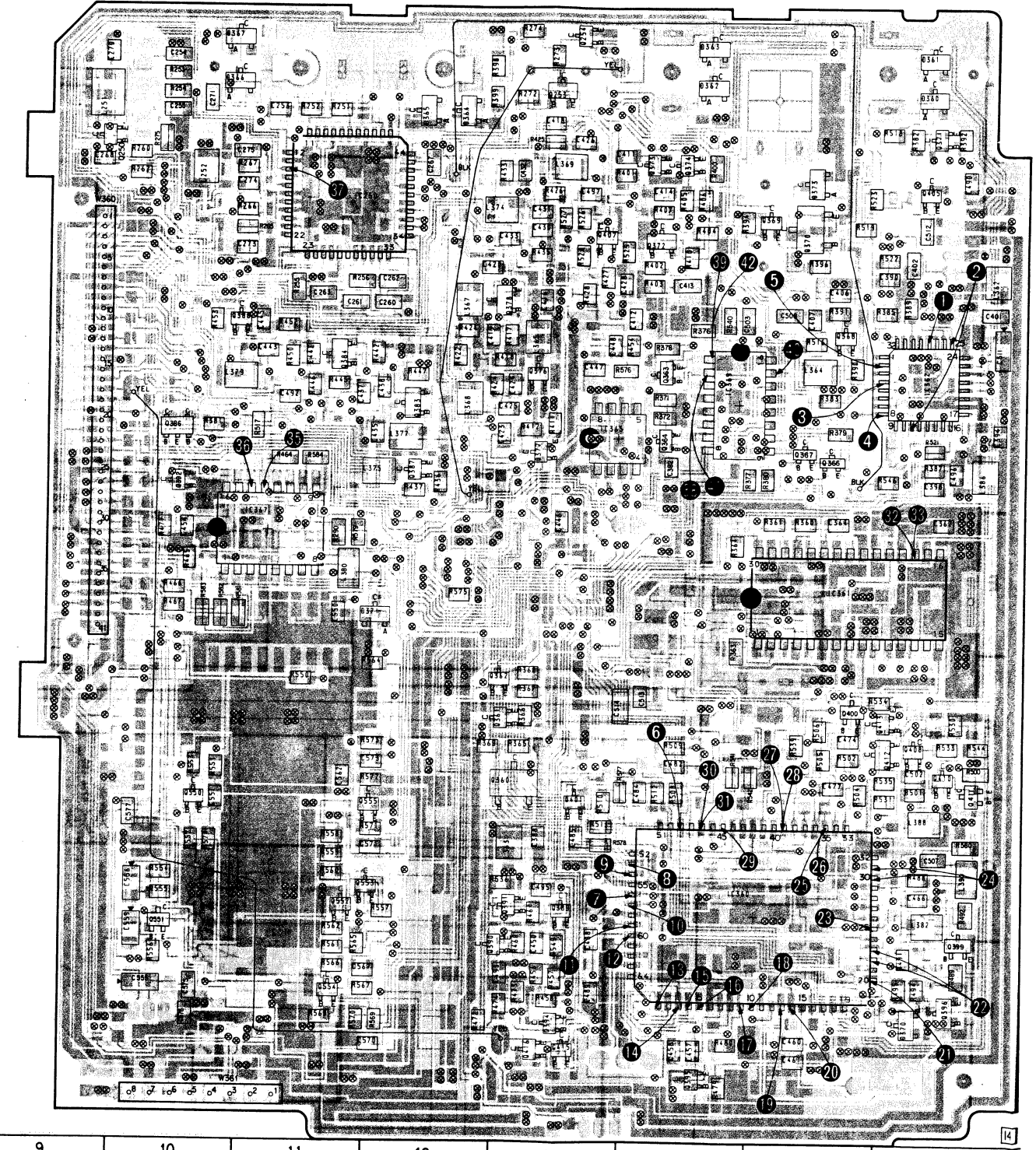
VIDEO, AUDIO VIDEO, AUDIO

FOR TABLE OF WAVEFORMS, SEE PAGE 100 AND 101.

VA-40 BOARD
(COMPONENT SIDE)



VA-40 BOARD (CONDUCTOR SIDE)



RV003 C-15
RV200 I-9
RV301 A-9
RV302 B-9

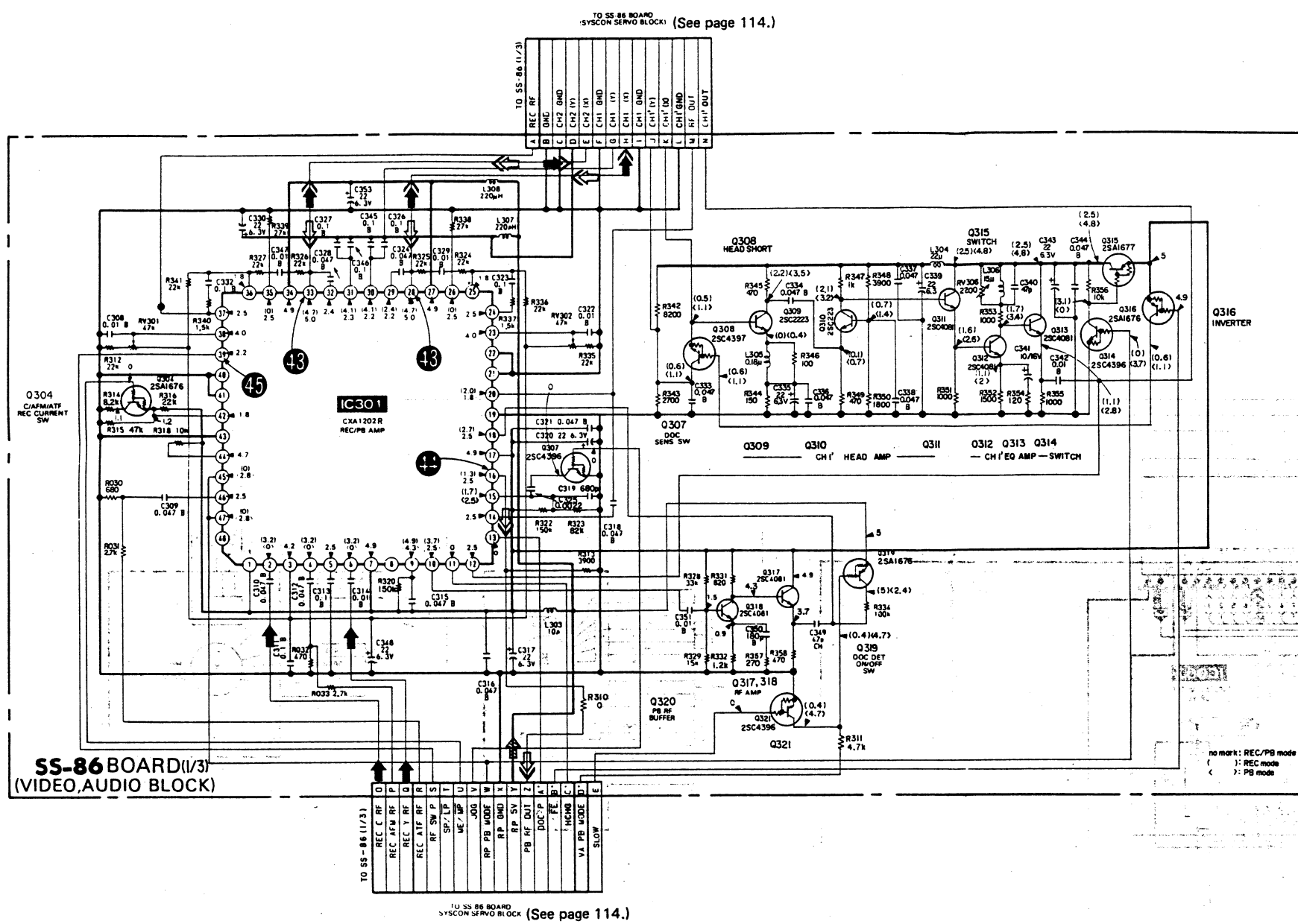
TP001 C-1
TP002 F-1
TP003 C-3
TP004 D-7
TP005 G-7
TP006 E-1
TP007 E-4
TP008 E-3

MC-Service

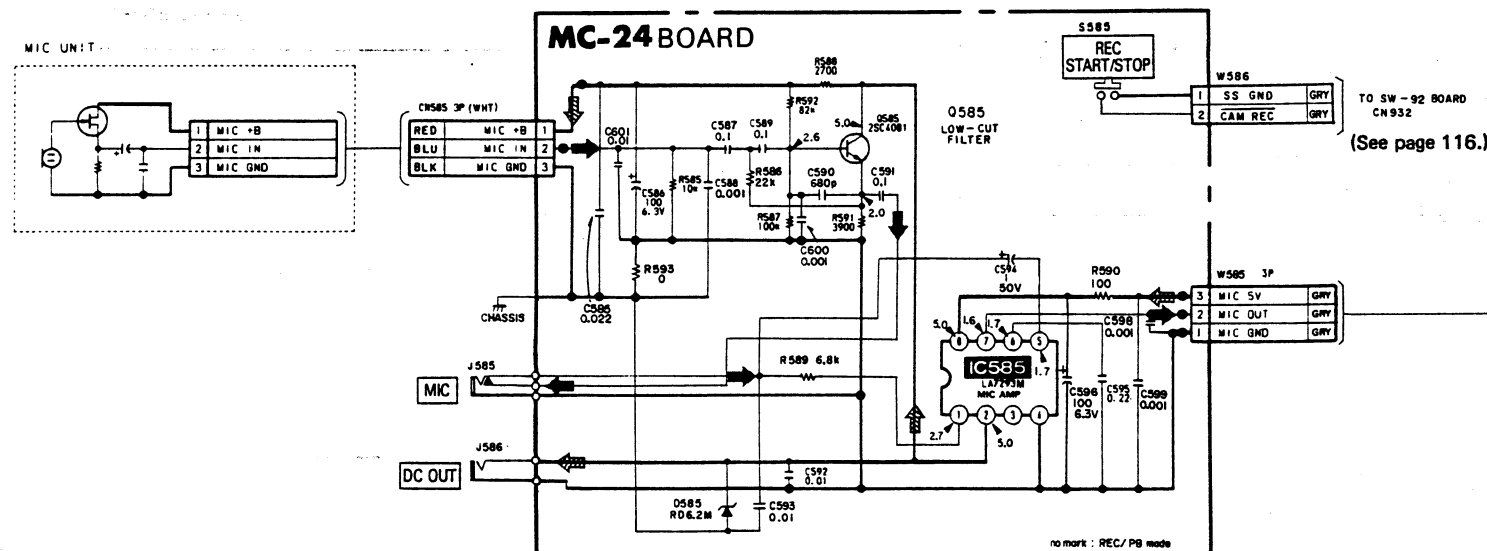
CN360 B-1	D370 H-16	Q250 B-9	Q369 B-15	Q383 D-12	Q396 H-16	Q409 F-1	Q555 G-12
CN361 H-7	D371 E-12	Q251 B-7	Q370 B-15	Q384 C-11	Q397 H-1	Q410 G-16	
	D373 B-15	Q252 B-7	Q371 B-16	Q385 C-6	Q398 H-1	Q411 G-16	RV360 B-2
CV360 E-6	IC250 B-11	Q253 A-13	Q372 B-14	Q386 D-10	Q399 H-16	Q412 F-16	RV361 D-6
	IC360 H-15	Q254 A-13	Q373 B-14	Q387 D-12	Q400 F-15	Q413 F-16	RV362 G-1
D-360 A-16	IC361 E-15	Q360 G-13	Q374 B-14	Q388 C-10	Q401 G-13	Q414 D-2	RV363 H-2
D361 A-16	IC362 C-16	Q361 F-13	Q375 B-3	Q389 H-13	Q402 G-4	Q415 I-13	RV364 G-2
D362 A-14	IC364 C-4	Q362 F-13	Q376 C-13	Q390 H-13	Q403 D-7	Q416 I-13	RV365 F-2
D363 A-14	IC365 D-13	Q363 C-14	Q377 D-13	Q391 H-13	Q404 D-7	Q550 G-10	RV366 F-3
D364 A-12	IC366 H-4	Q364 D-14	Q378 C-13	Q392 D-10	Q405 B-16	Q551 H-10	RV367 C-3
D365 A-12	IC367 E-11	Q365 C-3	Q379 C-5	Q393 E-7	Q406 B-4	Q552 H-11	RV368 C-7
D366 A-10	IC368 D-6	Q366 D-15	Q380 D-5	Q394 H-13	Q407 B-13	Q553 G-12	RV369 G-1
D367 A-10	IC369 D-14	Q367 D-15	Q381 D-5	Q395 I-14	Q408 F-16	Q554 H-11	
D369 C-5	IC550 G-6	Q368 C-15	Q382 B-4				

SS-86 (REC/PB AMP), VA-40 (VIDEO/AUDIO SIGNAL PROCESS), MC-24 (MIC AMP, START/STOP SWITCH) SCHEMATIC DIAGRAM

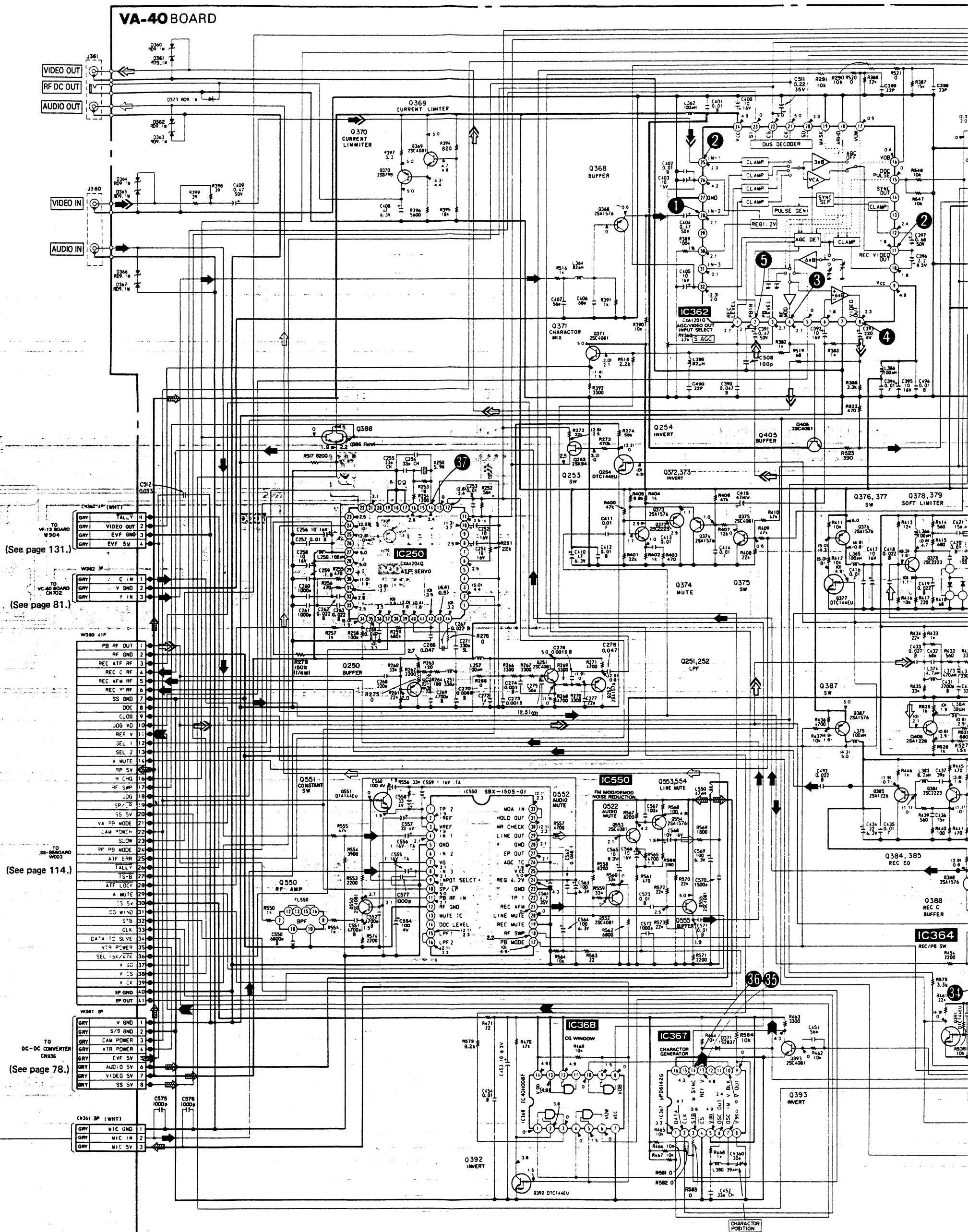
— Ref. No. SS-86, VA-40, MC-24 BOARDS: 2,000 series —



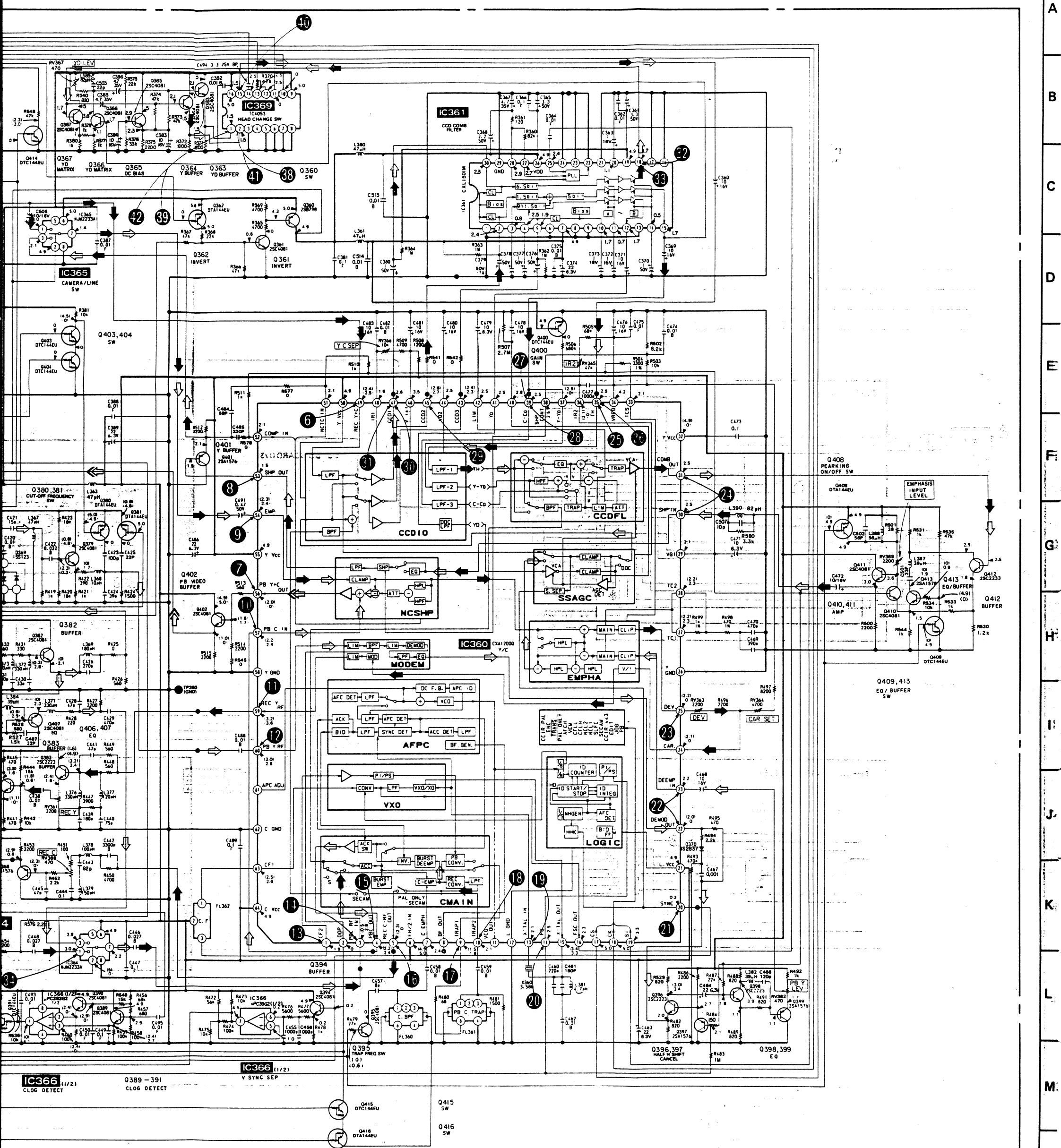
- Note:**
- Signal path:
 - REC Y Signal
 - PB Y Signal
 - REC CHROMA Signal
 - PB CHROMA Signal
 - REC Y/CHROMA Signal
 - PB Y/CHROMA Signal
 - REC AUDIO Signal
 - PB AUDIO Signal



MC-Service







no mark: REC/PB mode
(): REC mode
(): PB mode
(): CAMERA REC mode

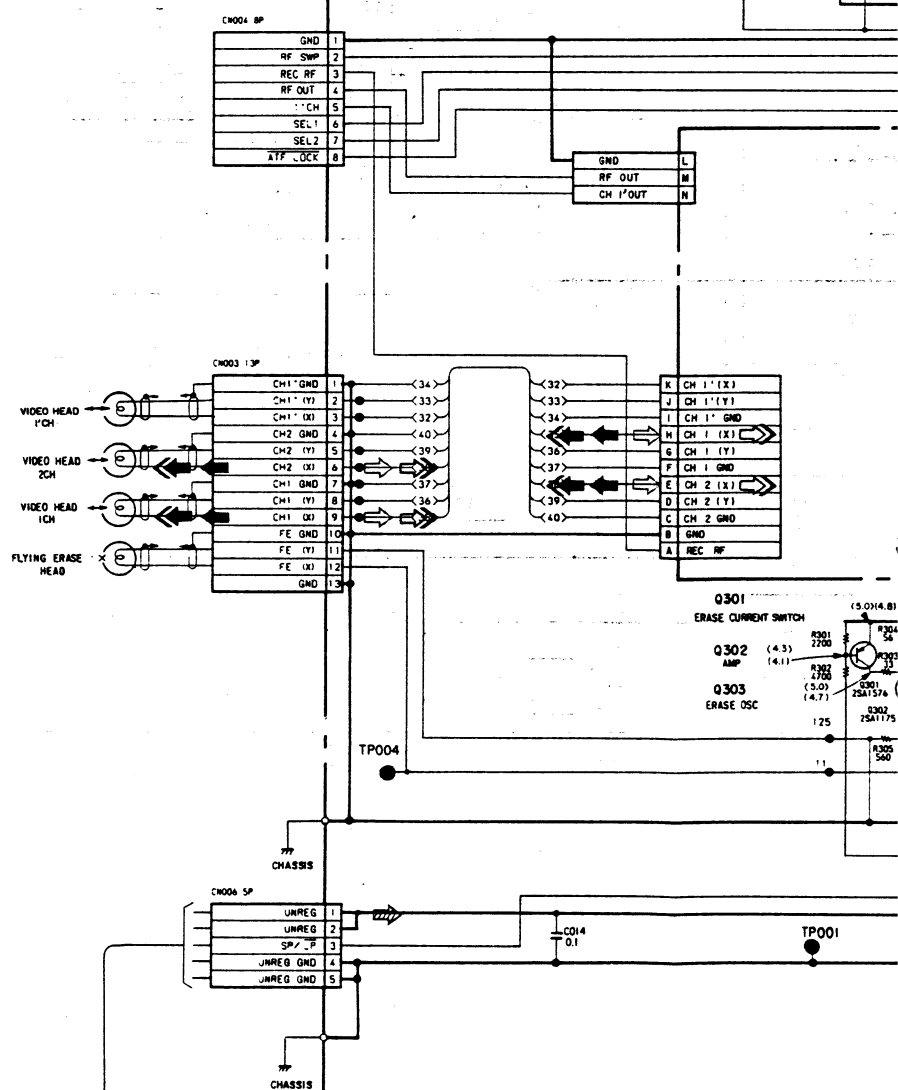
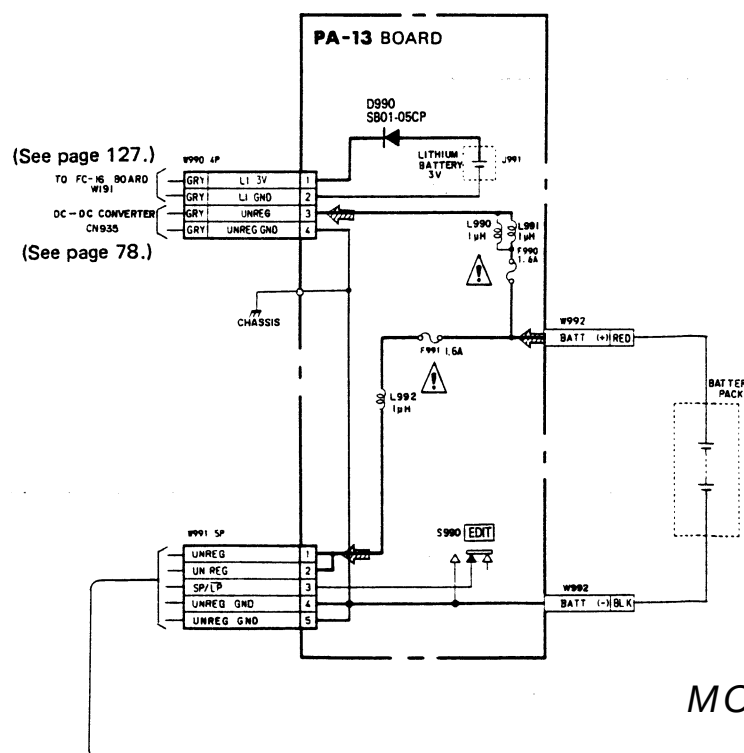
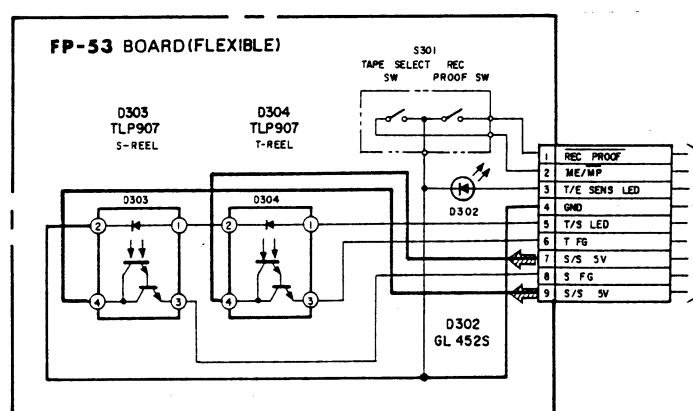
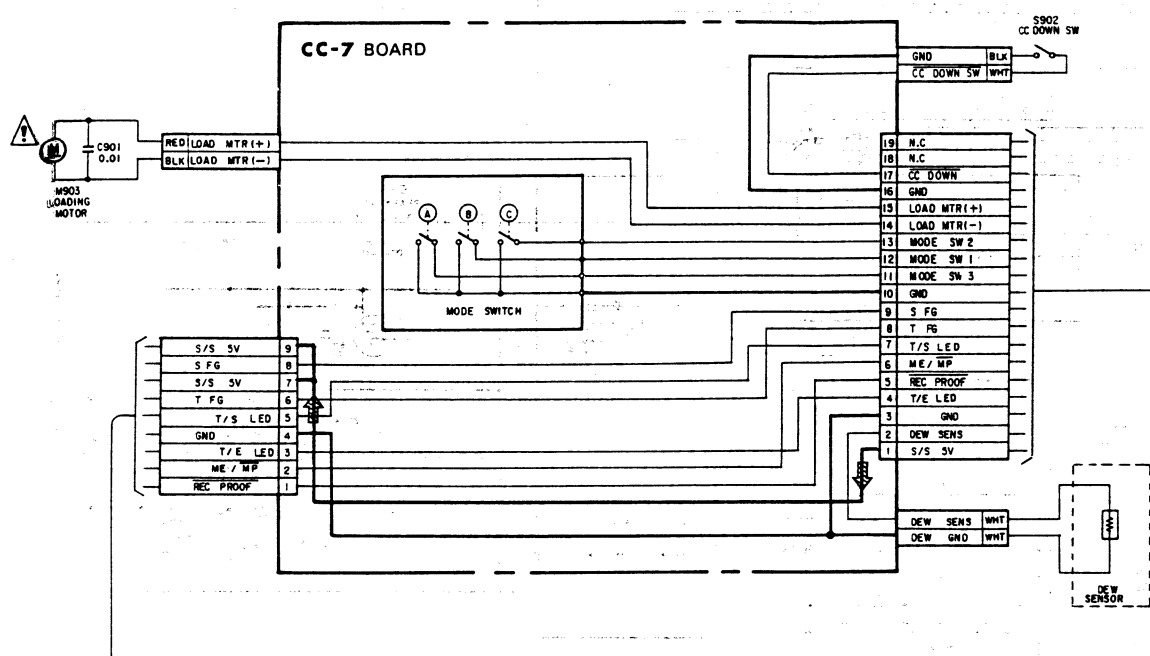
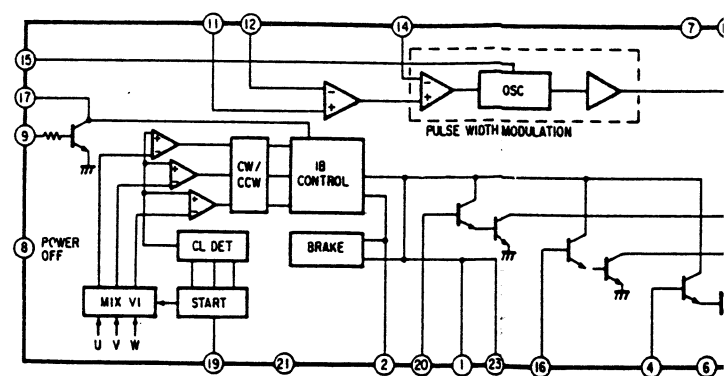
FOR TABLE OF WAVEFORMS, SEE PAGE 100 AND 101.

MC-Service

- Signal path

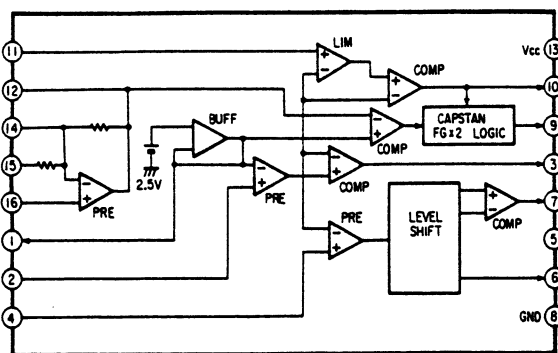
- Signal path
- ➡ : REC Y Signal
 - ➡ : REC CHROMA Signal
 - ➡➡ : REC Y/CHROMA Signal
 - ⬅➡ : PB Y/CHROMA Signal
 - ⬅➡ : REC AUDIO Signal
 - ⬅➡ : PB AUDIO Signal

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

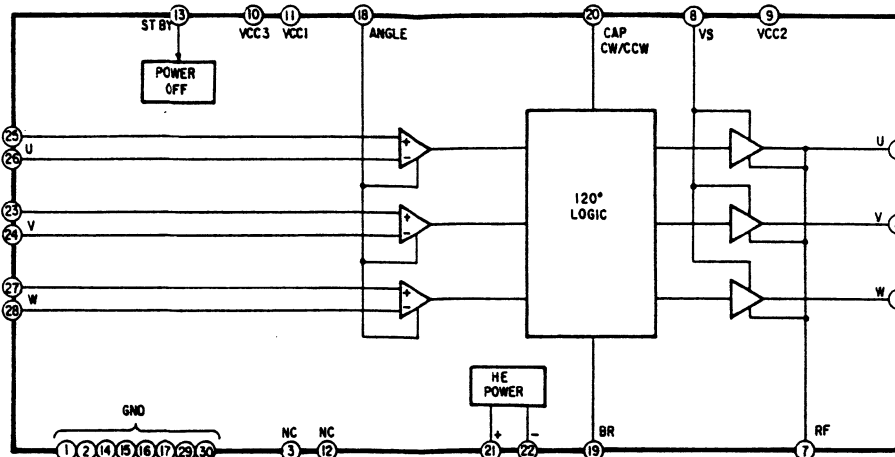


MC-Service

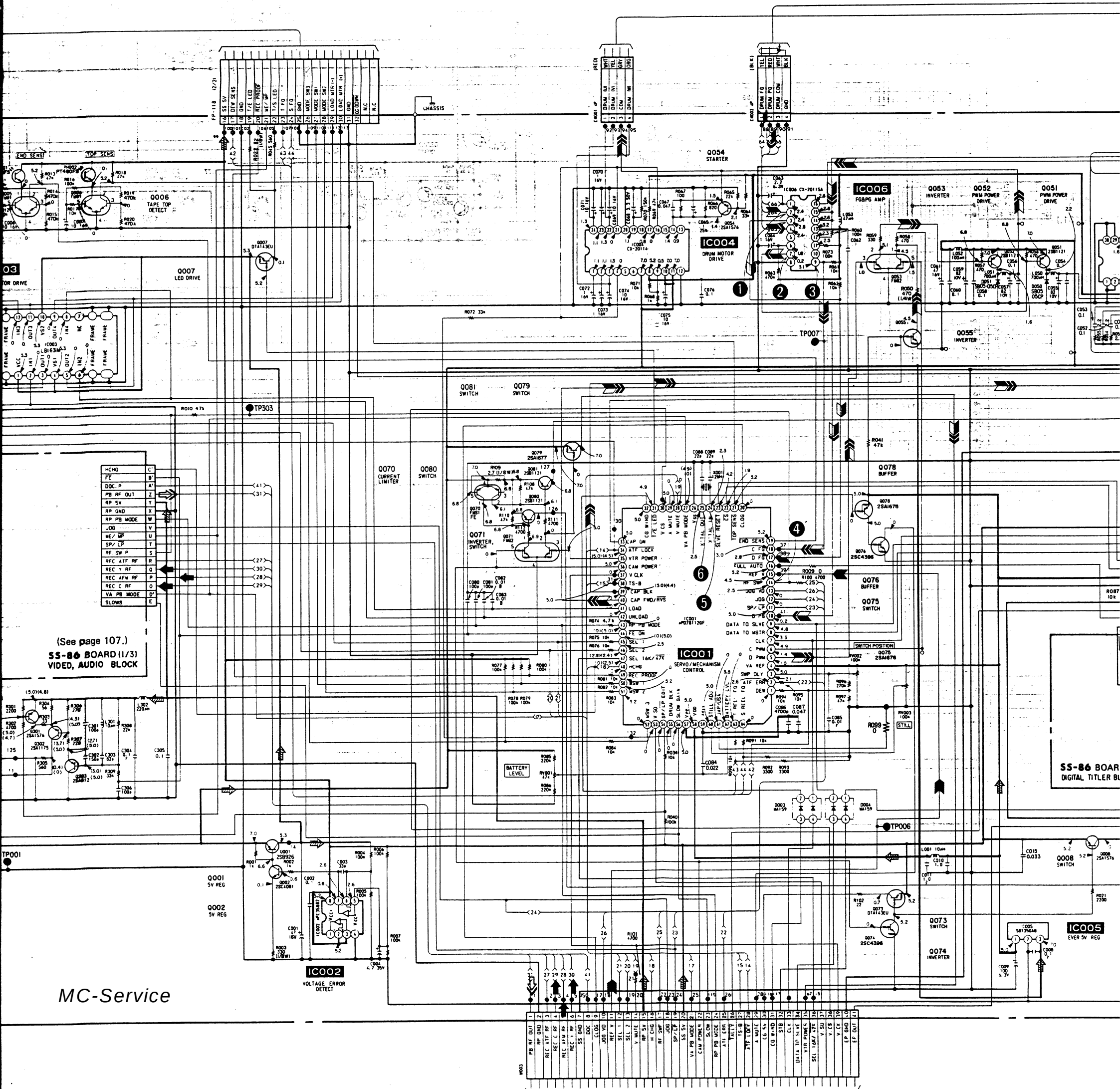
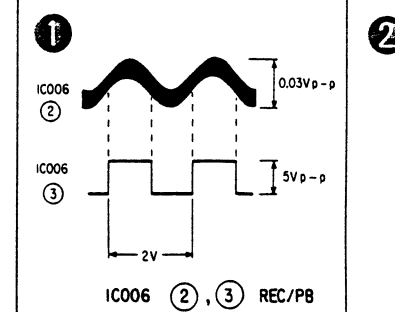
IC006 CX20115A

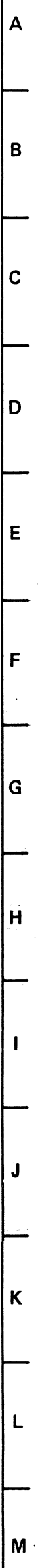


IC007 CXA1127M



SS-86 BOARD

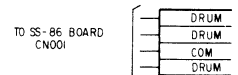
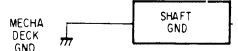
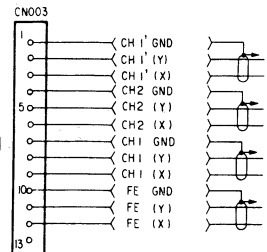
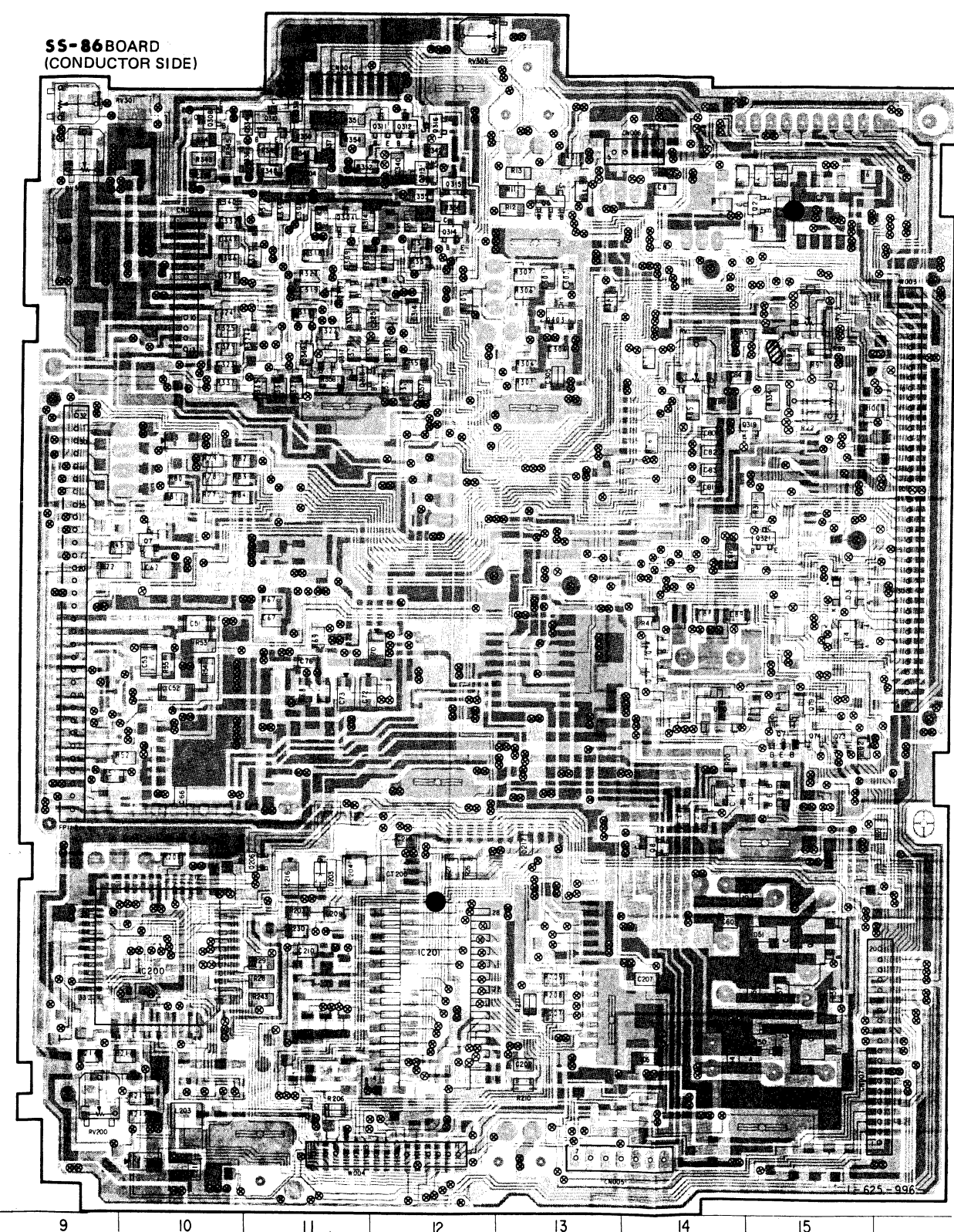
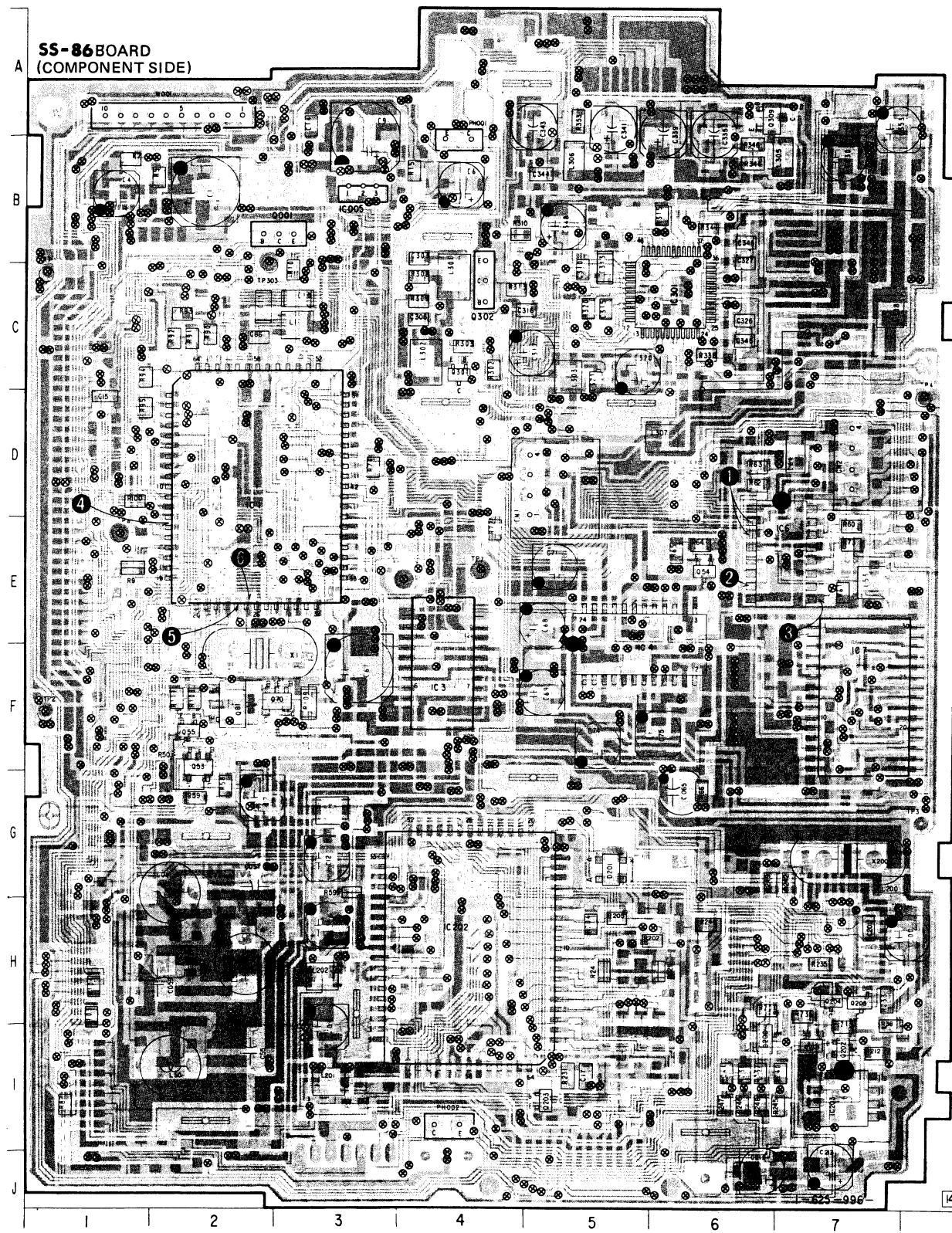




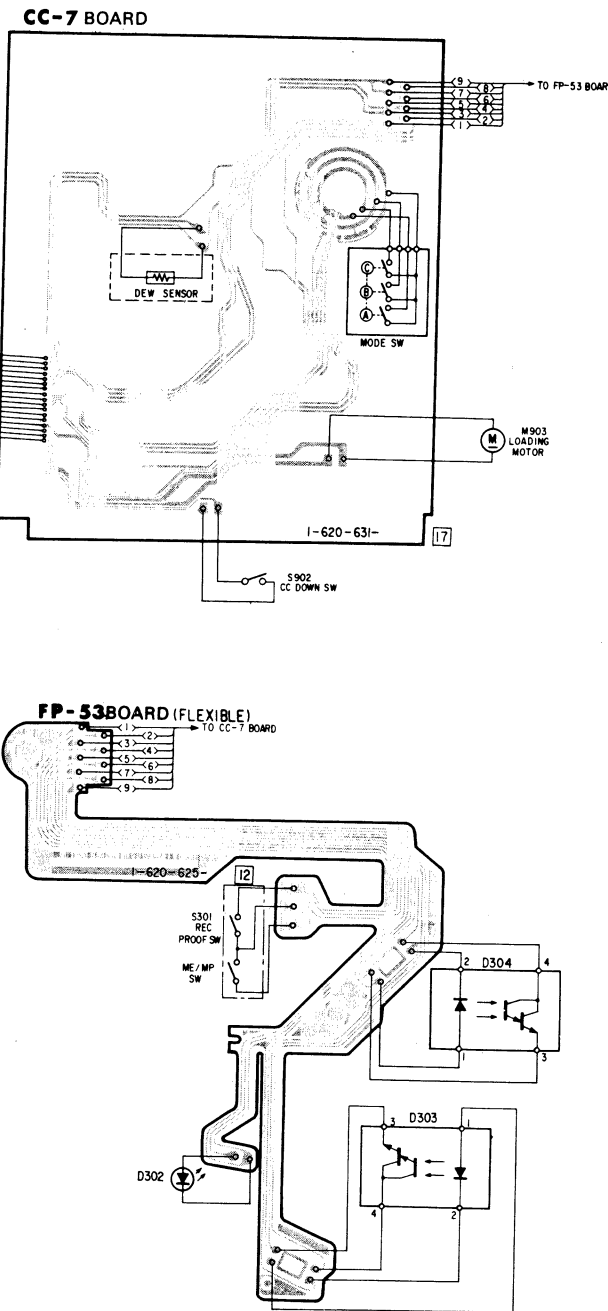
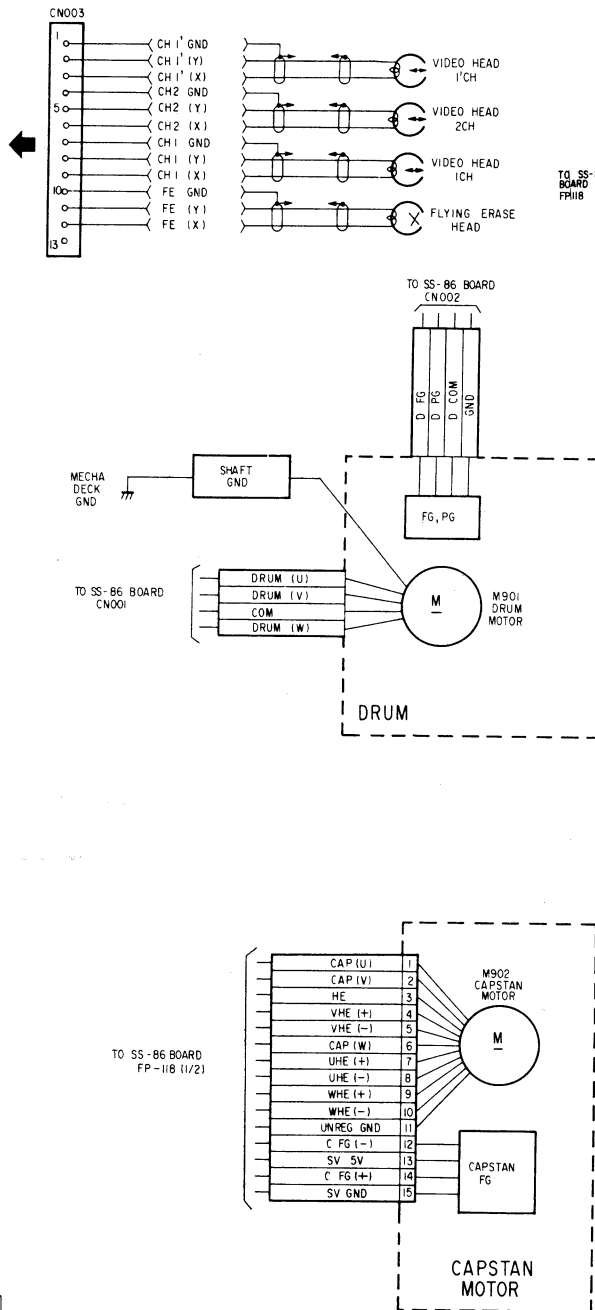
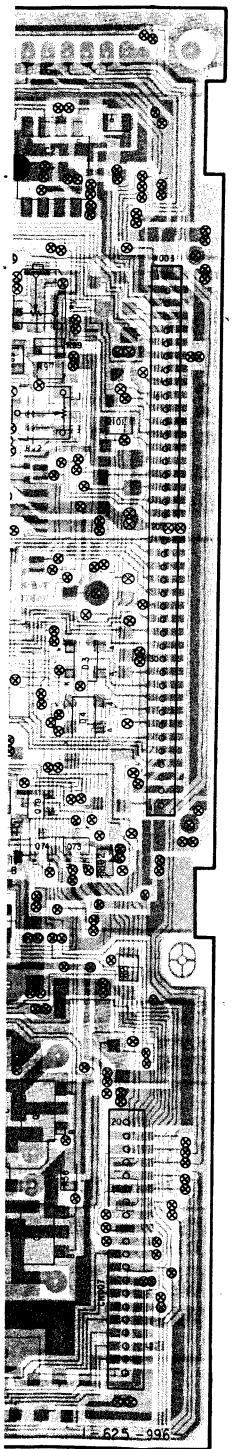
P/

SERVO/SYSTEM CONTROL SERVO/SYSTEM CONTROL

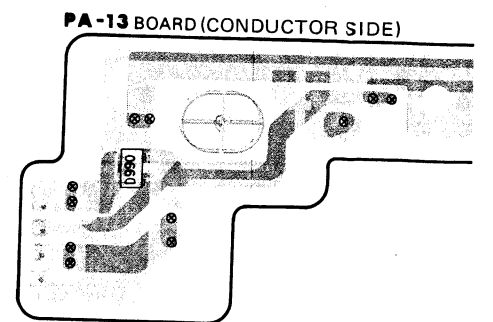
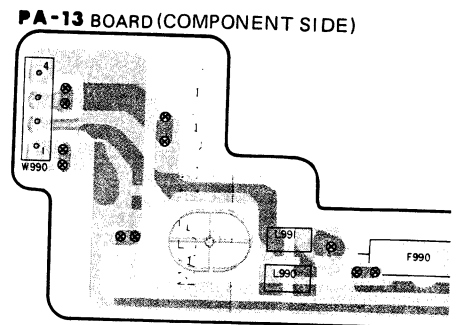
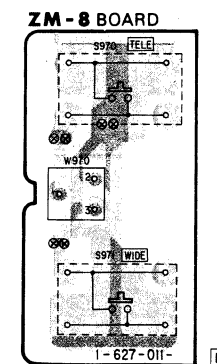
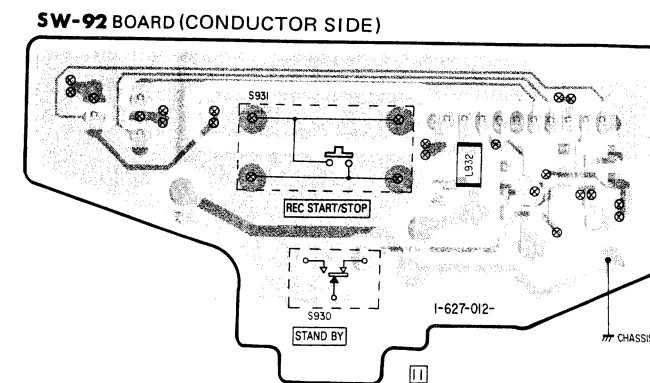
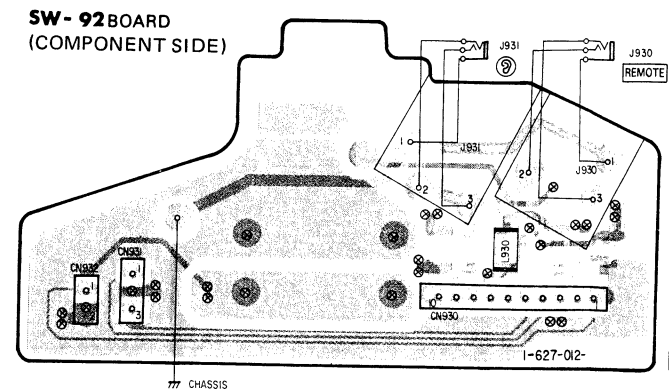
SS-86 (SYSTEM CONTROL, SERVO), SW-92 (START/STOP, STANDBY SWITCH, INPUT/OUTPUT JACK), ZM-8 (ZOOM SWITCH), PA-13 (POWER), CC-7 (MODE SWITCH), FP-53 (TAPE SELECT/CASSETTE IN SWITCH) PRINTED WIRING BOARDS
 - Ref. No. SS-86 BOARD: 2,000 series, SW-92, ZM-8, PA-13, CC-7, FP-53 BOARDS: 3,000 series -



TO SS-86 BOARD
FP-1B (1/2)



CN001 D-5	IC001 D-2	Q052 H-15	Q302 C-4	TP004 D-7
CN002 D-7	IC002 B-15	Q053 G-2	Q303 C-13	TP005 G-7
CN003 C-1 0	IC003 F-4	Q054 E-6	Q304 C-11	TP006 E-1
CN004 A-1 1	IC004 F-5	Q055 F-2	Q306 C-11	TP007 E-4
CN005 I-5	IC005 B-3	Q070 F-2	Q307 C-11	TP008 E-3
CN006 B-1 4	IC006 E-6	Q071 F-15	Q317 C-11	
CN007 H-16	IC007 F-7	Q073 F-15	Q318 D-11	
	IC200 H-10	Q074 F-15	Q319 D-14	
	IC201 H-12		Q320 C-5	
D001 I-14	IC202 G-4	Q076 F-14	RV001 C-14	
D003 E-15	IC203 I-7	Q078 F-14	RV002 D-15	
D004 F-15	IC301 C-6	Q079 F-15	RV003 C-15	
D007 E-10		Q080 F-14	RV200 I-9	
D008 I-14		Q081 F-2	RV301 A-9	
D050 H-15	Q001 B-2	Q201 H-7	RV302 B-9	
D051 H-14	Q002 B-14	Q202 I-7		
D200 H-6	Q005 B-13	Q203 I-5		
D201 G-5	Q006 G-14	Q204 H-7		
D203 D-11	Q007 E-10	Q205 H-7		
	Q008 G-14	Q206 G-10		
	Q051 H-15	Q301 D-4		



Note:

- ⊗ : Through hole.
- ■ : Pattern of the rear side.

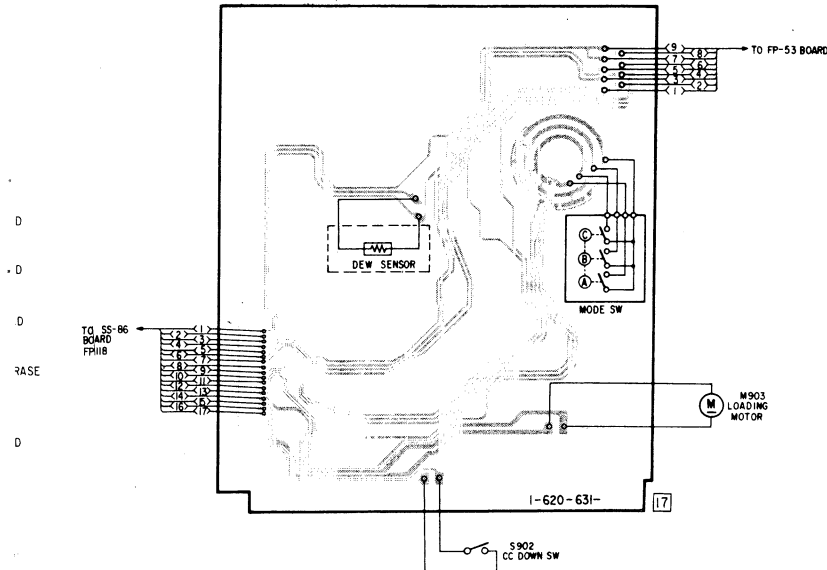
Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.

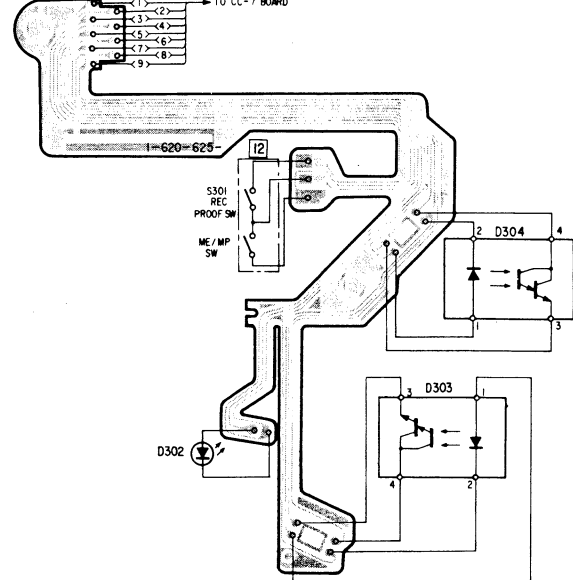
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

- Digital transistor (SS-86: Q007, Q055, Q071, Q073, Q074, Q076, Q078, Q079) is transistor with resistor. Refer to the SS-86 board schematic diagram for digital transistor.

CC-7 BOARD

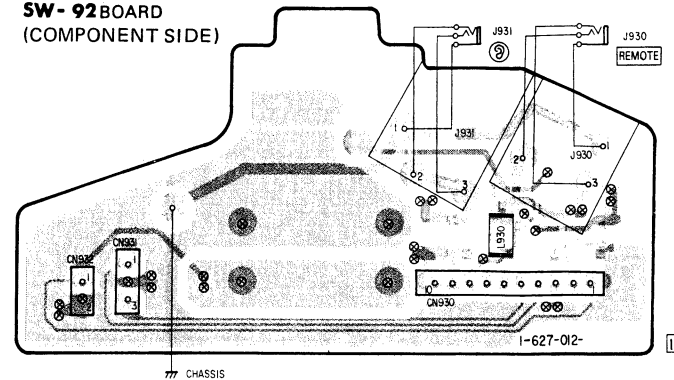


FP-53 BOARD (FLEXIBLE)

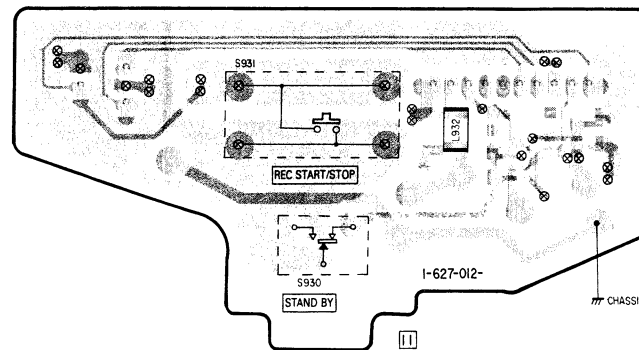


CN001	D-5	IC001	D-2	Q052	H-15	Q302	C-4	TP004	D-7
CN002	D-7	IC002	B-15	Q053	G-2	Q303	C-13	TP005	G-7
CN003	C-10	IC003	F-4	Q054	E-6	Q304	C-11	TP006	E-1
CN004	A-11	IC004	F-5	Q055	F-2	Q306	C-11	TP007	E-4
CN005	I-5	IC005	B-3	Q070	F-2	Q307	C-11	TP008	E-3
CN006	B-14	IC006	E-6	Q071	F-15	Q317	C-11		
CN007	H-16	IC007	F-7	Q073	F-15	Q318	D-11		
		IC200	H-10	Q074	F-15	Q319	D-14		
		IC201	H-12			Q320	C-5		
D001	I-14	IC202	G-4	Q076	F-14	RV001	C-14		
D003	E-15	IC203	I-7	Q078	F-14	RV002	D-15		
D004	F-15	IC301	C-6	Q079	F-15	RV003	C-15		
D007	E-10			Q080	F-14	RV200	I-9		
D008	I-14			Q081	F-2	RV301	A-9		
D050	H-15	Q001	B-2	Q201	H-7	RV302	B-9		
D051	H-14	Q002	B-14	Q202	I-7				
D200	H-6	Q005	B-13	Q203	I-5				
D201	G-5	Q006	G-14	Q204	H-7				
D203	D-11	Q007	E-10	Q205	H-7				
		Q008	G-14	Q206	G-10				
		Q051	H-15	Q301	D-4				

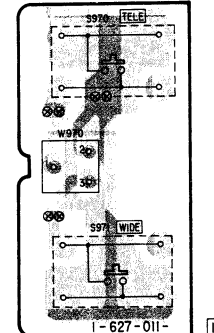
SW-92 BOARD
(COMPONENT SIDE)



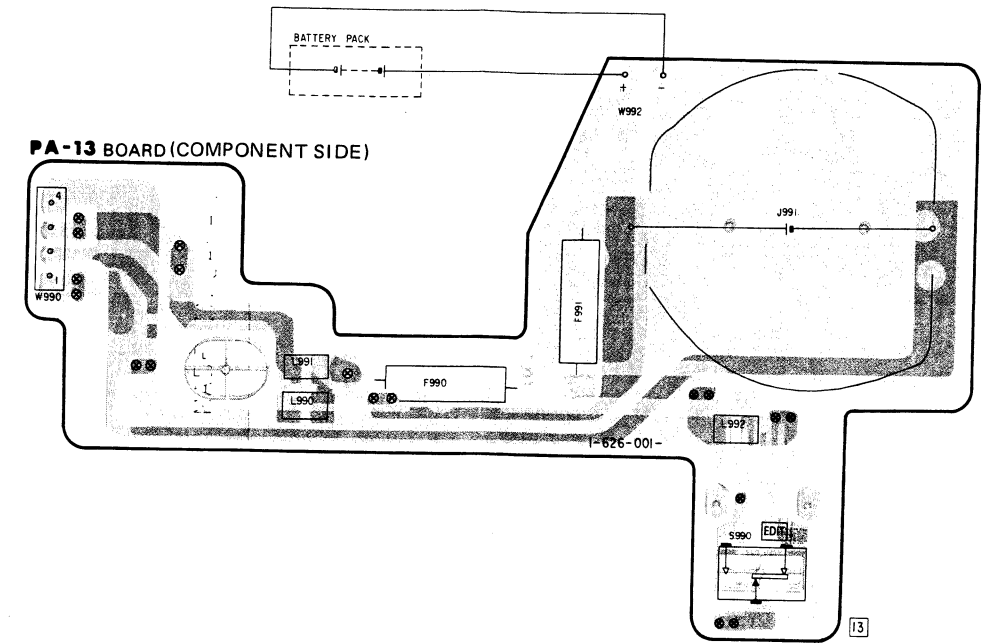
SW-92 BOARD (CONDUCTOR SIDE)



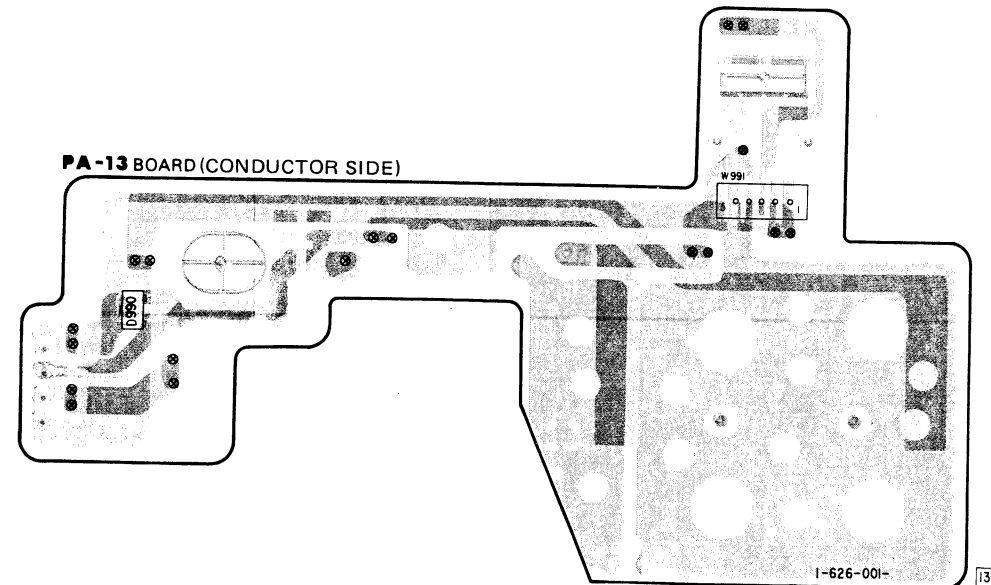
ZM-8 BOARD



PA-13 BOARD (COMPONENT SIDE)



PA-13 BOARD (CONDUCTOR SIDE)



Note:

- ⊗ : Through hole.
- ■ : Pattern of the rear side.

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

- Digital transistor (SS-86: Q007, Q055, Q071, Q073, Q074, Q076, Q078, Q079) is transistor with resistor. Refer to the SS-86 board schematic diagram for digital transistor.

MC-Service

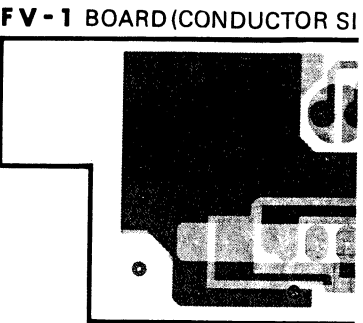
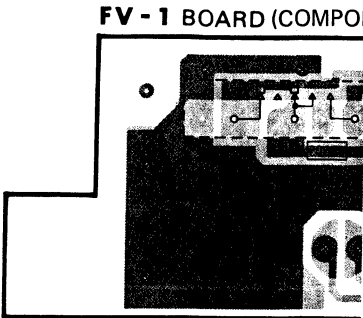
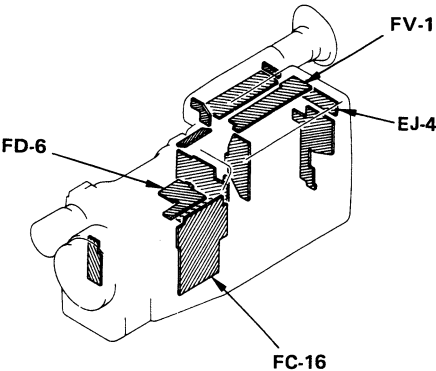
MODE CONTROL

MODE CONTROL MODE CONTROL

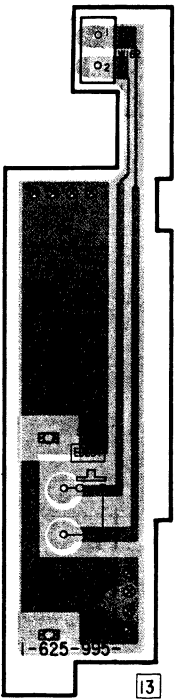
4-7. FC-16 (MODE CONTROL),
FV-1 (POWER SWITCH, VTR FUNCTION SWITCH),
FD-6 (CAMERA DATA FUNCTION SWITCH),
EJ-4 (EJECT SWITCH) PRINTED WIRING BOARDS
– Ref. No. FC-16, FV-1, FD-6, EJ-4 BOARDS: 4,000 series –

Note:
• ⊗ : Through hole.
• ▨ : Pattern of the rear side.

Caution:
Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.



EJ-4 BOARD
(COMPONENT SIDE)



MC-Service

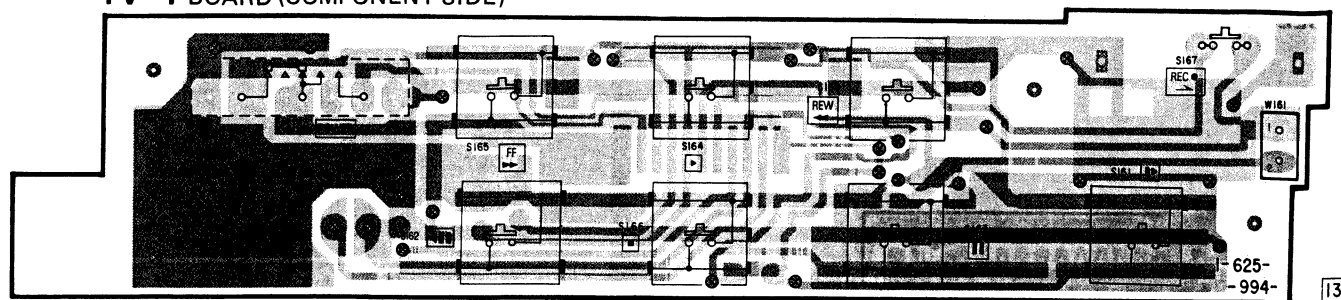
ON SWITCH),
ITCH),
VG BOARDS
t,000 series -

de seen from
d.
le seen from

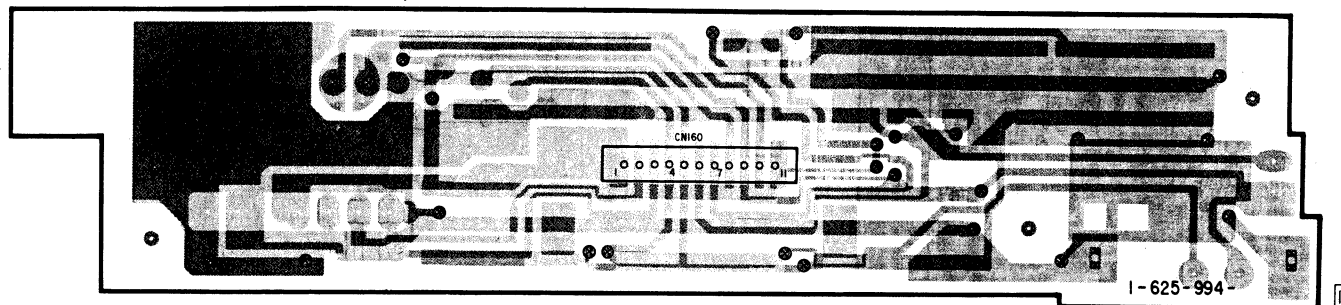
V-1

EJ-4

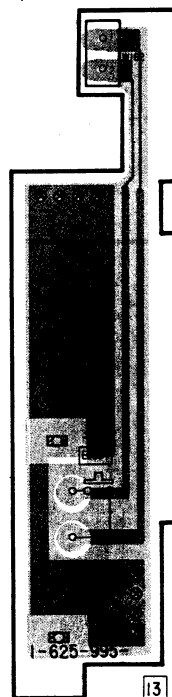
FV - 1 BOARD (COMPONENT SIDE)



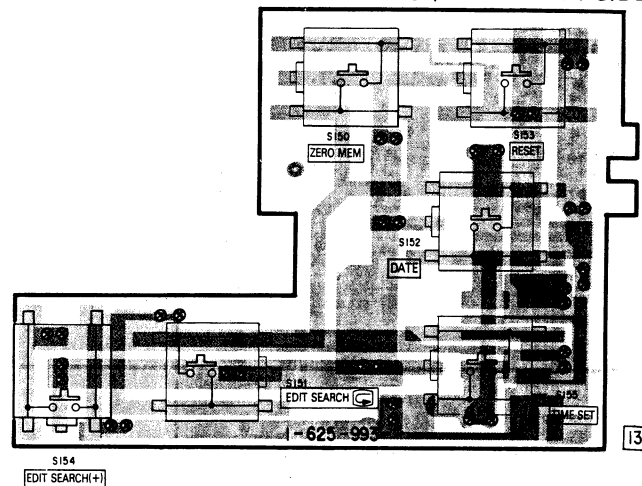
FV - 1 BOARD (CONDUCTOR SIDE)



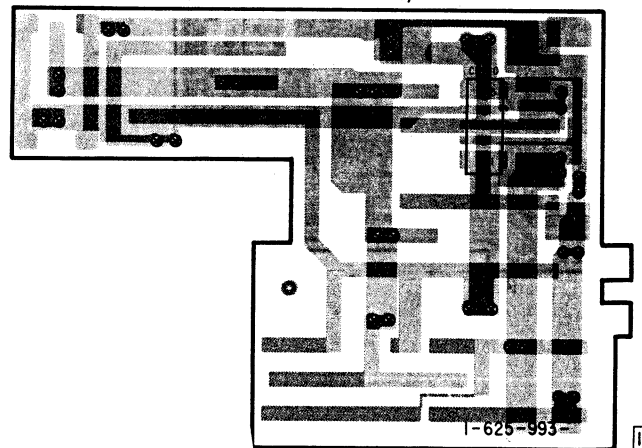
**EJ - 4 BOARD
(COMPONENT SIDE)**



FD - 6 BOARD (COMPONENT SIDE)

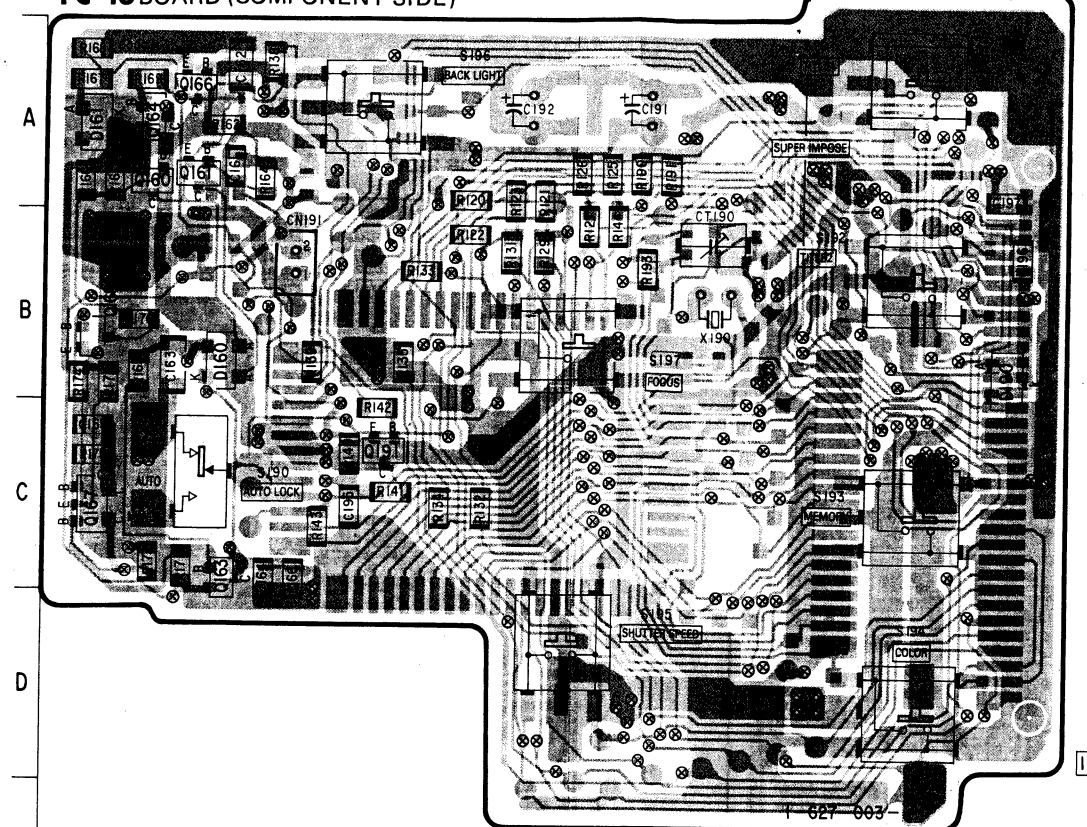


FD - 6 BOARD (CONDUCTOR SIDE)

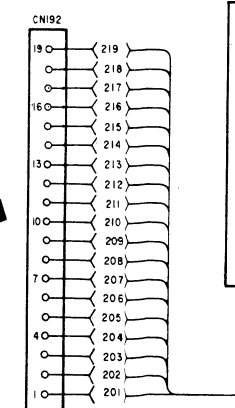
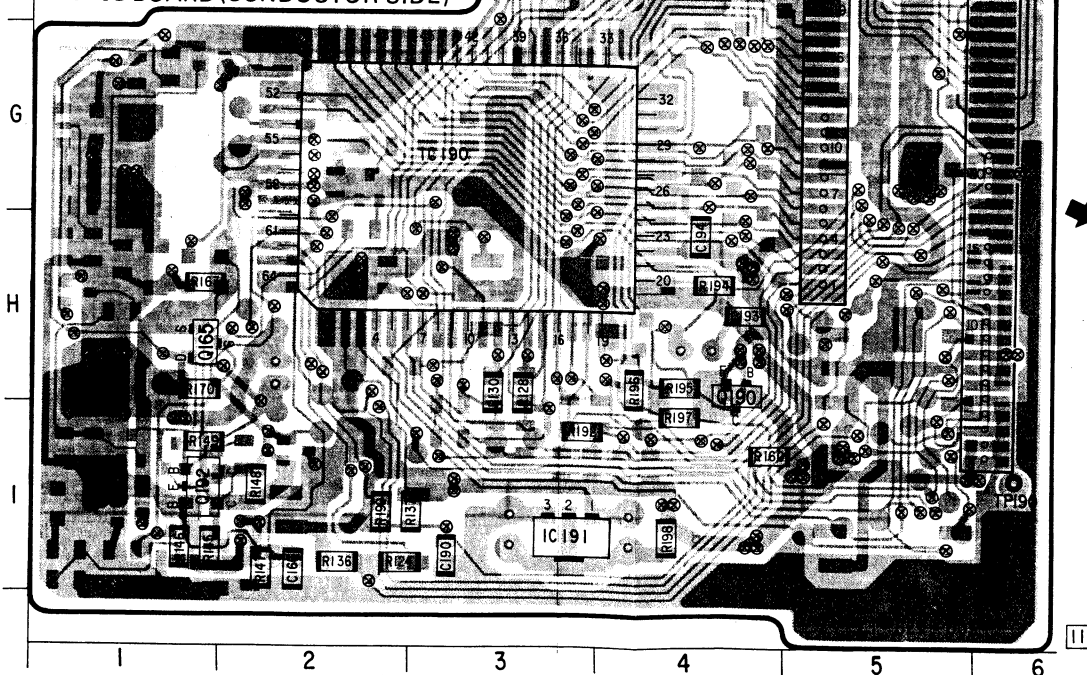


MODE CONTROL MODE CONTROL

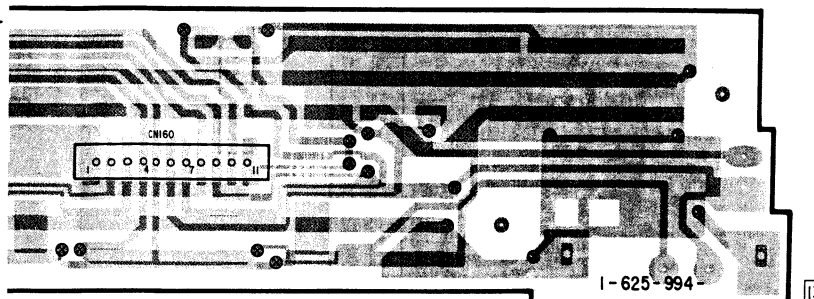
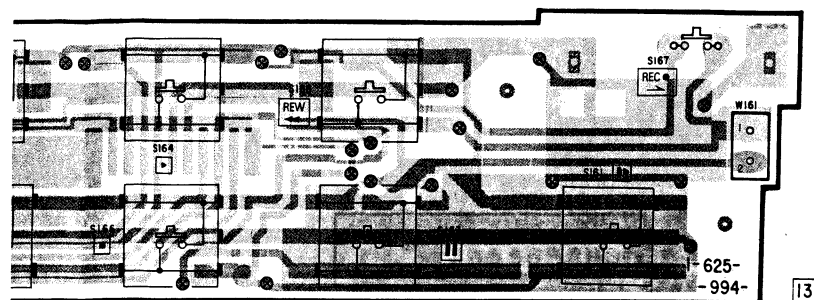
FC-16 BOARD (COMPONENT SIDE)



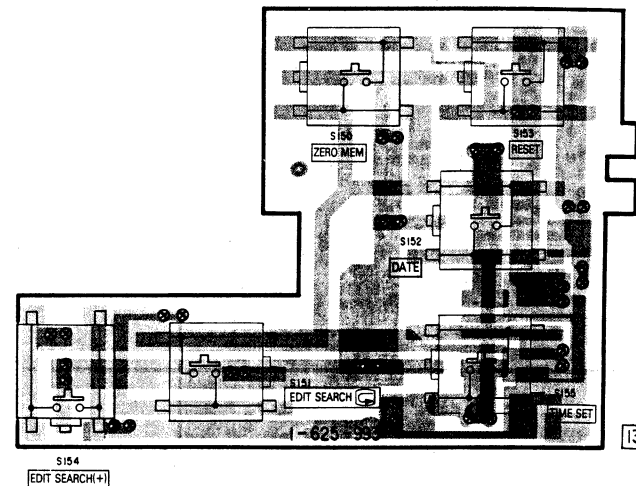
FC-16 BOARD (CONDUCTOR SIDE)



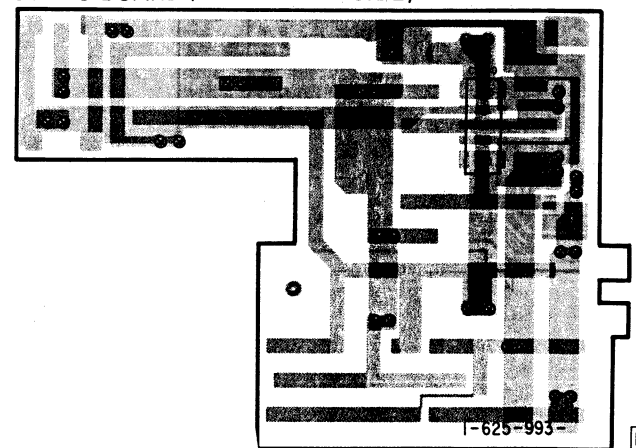
MODE CONTROL MODE CONTROL



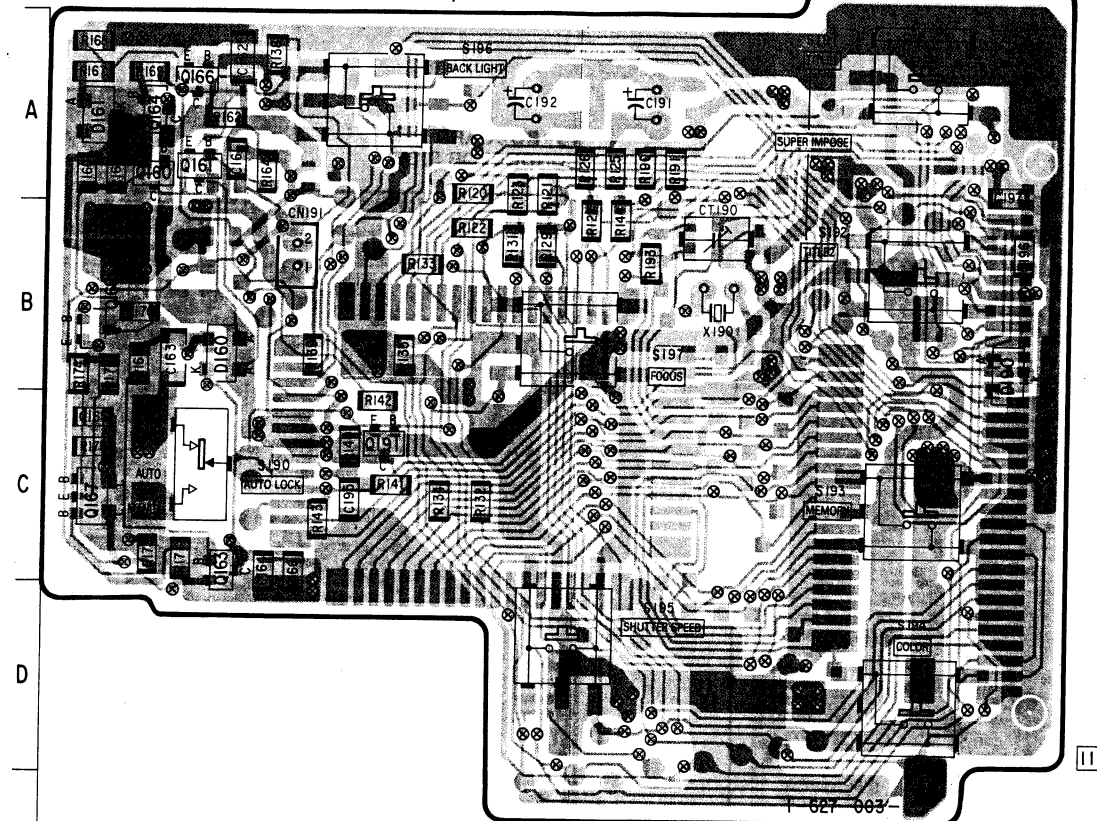
FD-6 BOARD (COMPONENT SIDE)



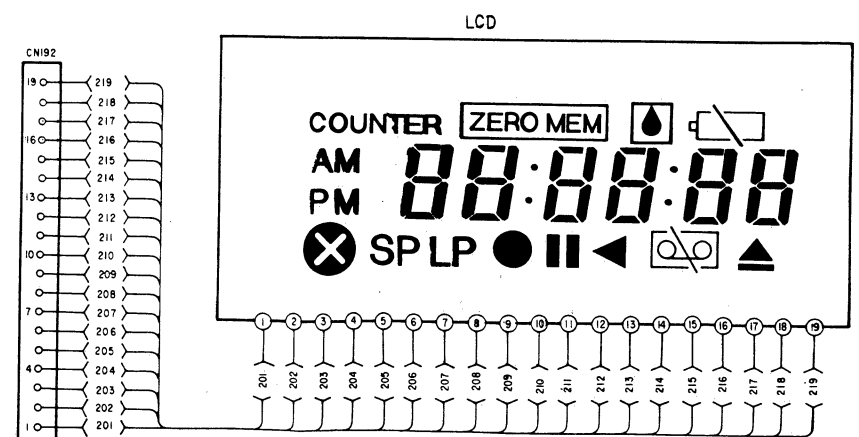
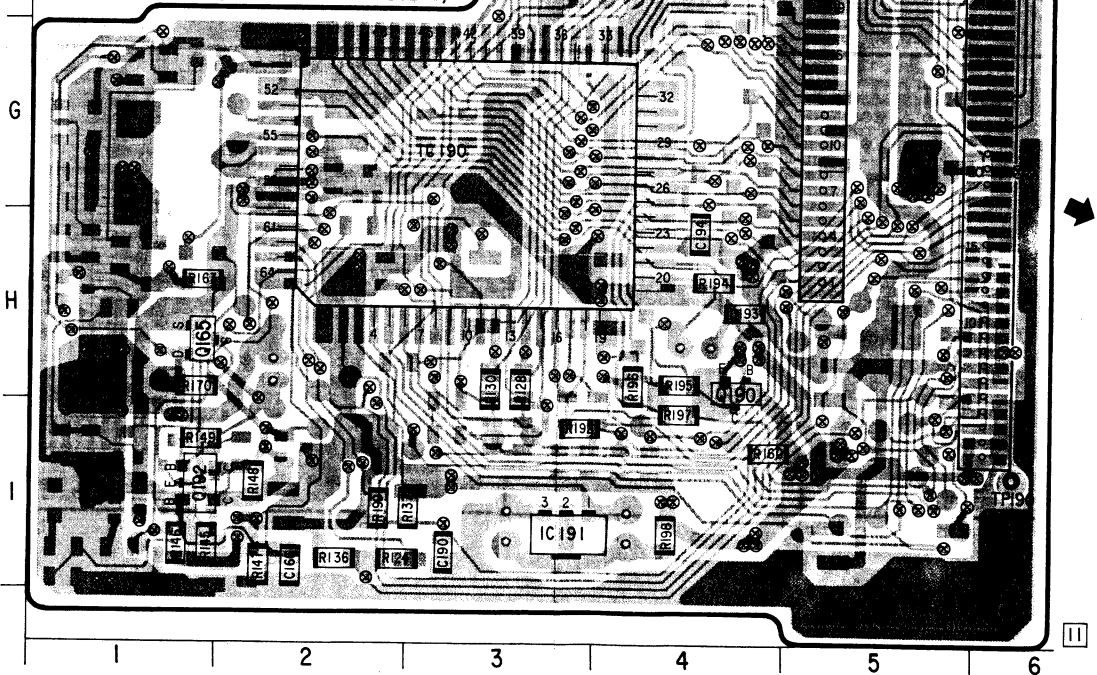
FD-6 BOARD (CONDUCTOR SIDE)



FC-16 BOARD (COMPONENT SIDE)



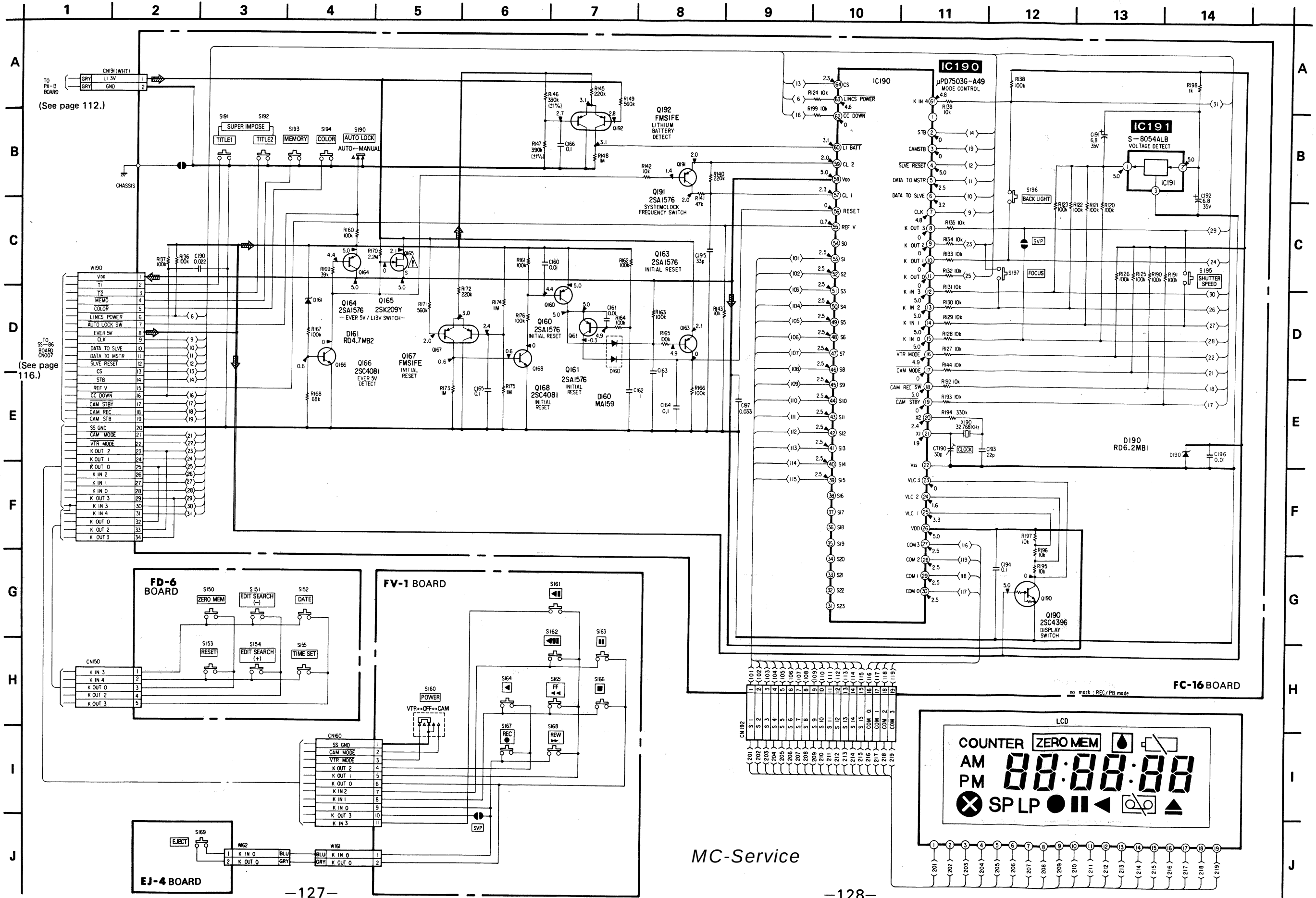
FC-16 BOARD (CONDUCTOR SIDE)



MODE CONTROL MODE CONTROL

FC-16 (MODE CONTROL), FV-1 (POWER SWITCH, VTR FUNCTION SWITCH), FD-6 (CAMERA DATA FUNCTION SWITCH), EJ-4 (EJECT SWITCH) SCHEMATIC DIAGRAM

— Ref. No. FC-16, FV-1, FD-6, EJ-4 BOARDS: 4,000 series —



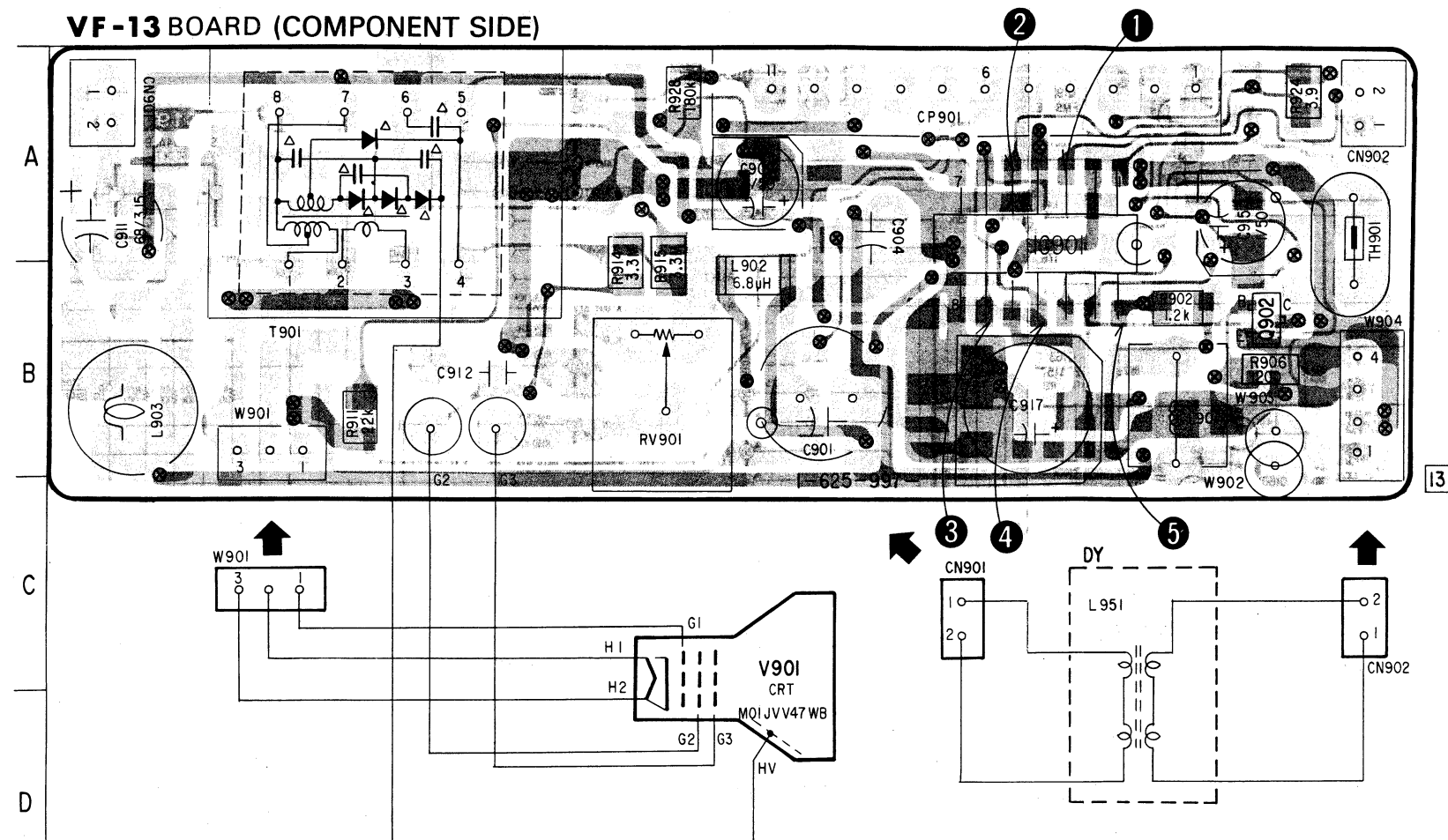
VIEWFINDER VIEWFINDER

4.8. VF-13 (VIEWFINDER), TL-18 (LED), TL-19 (LED) PRINTED WIRING BOARDS

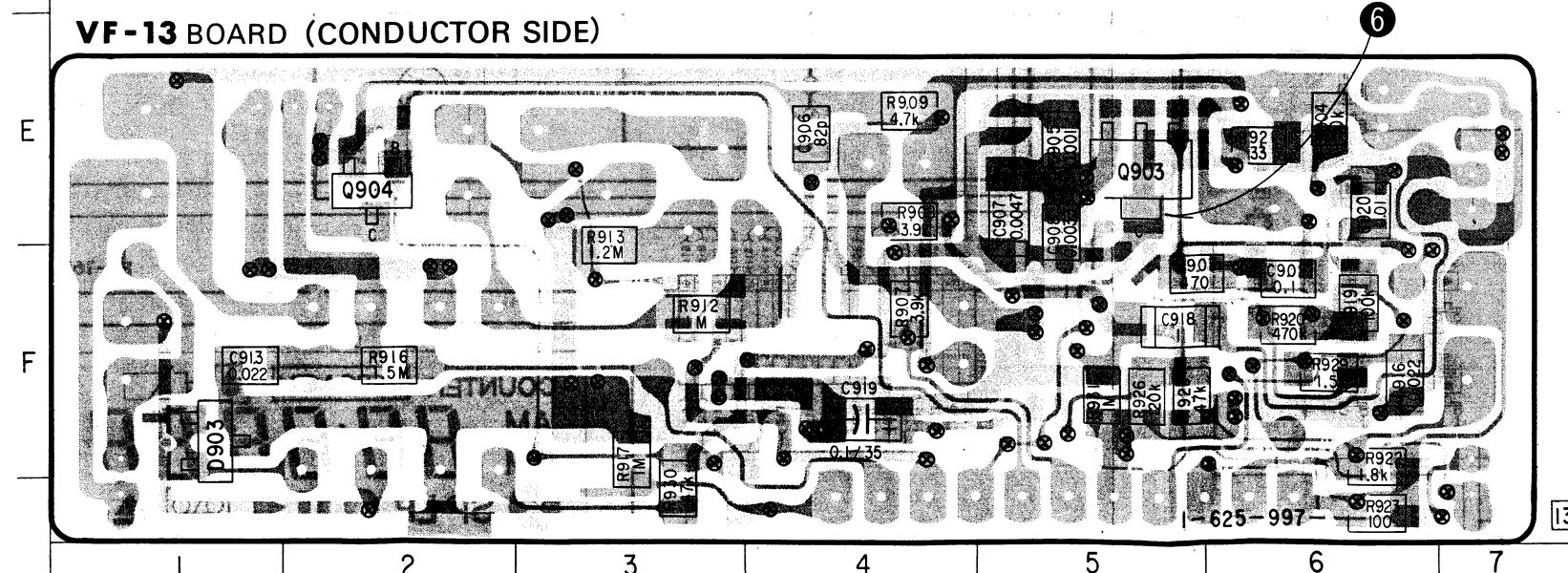
– Ref. No. VF-13, TL-18, TL-19 BOARDS: 5,000 series –

CN901	A - 1
CN902	A - 7
D903	F - 1
IC901	A - 5
Q902	B-6
Q903	E-5
Q904	E-2

VF-13 BOARD (COMPONENT SIDE)



VF-13 BOARD (CONDUCTOR SIDE)



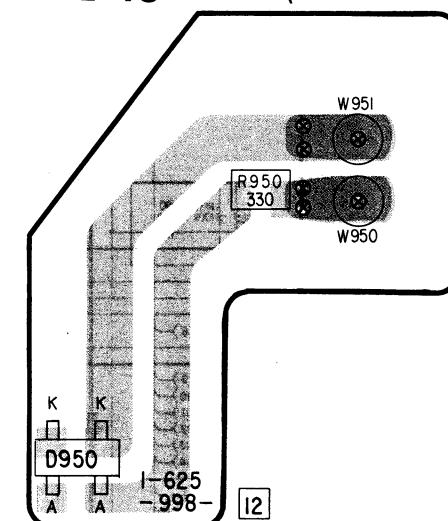
Note:

- ⊗ : Through hole.
- [Pattern] : Pattern of the rear side.

Caution:

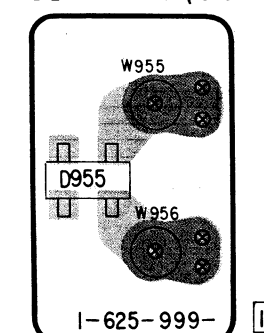
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

TL-18 BOARD (COMPONENT SIDE)

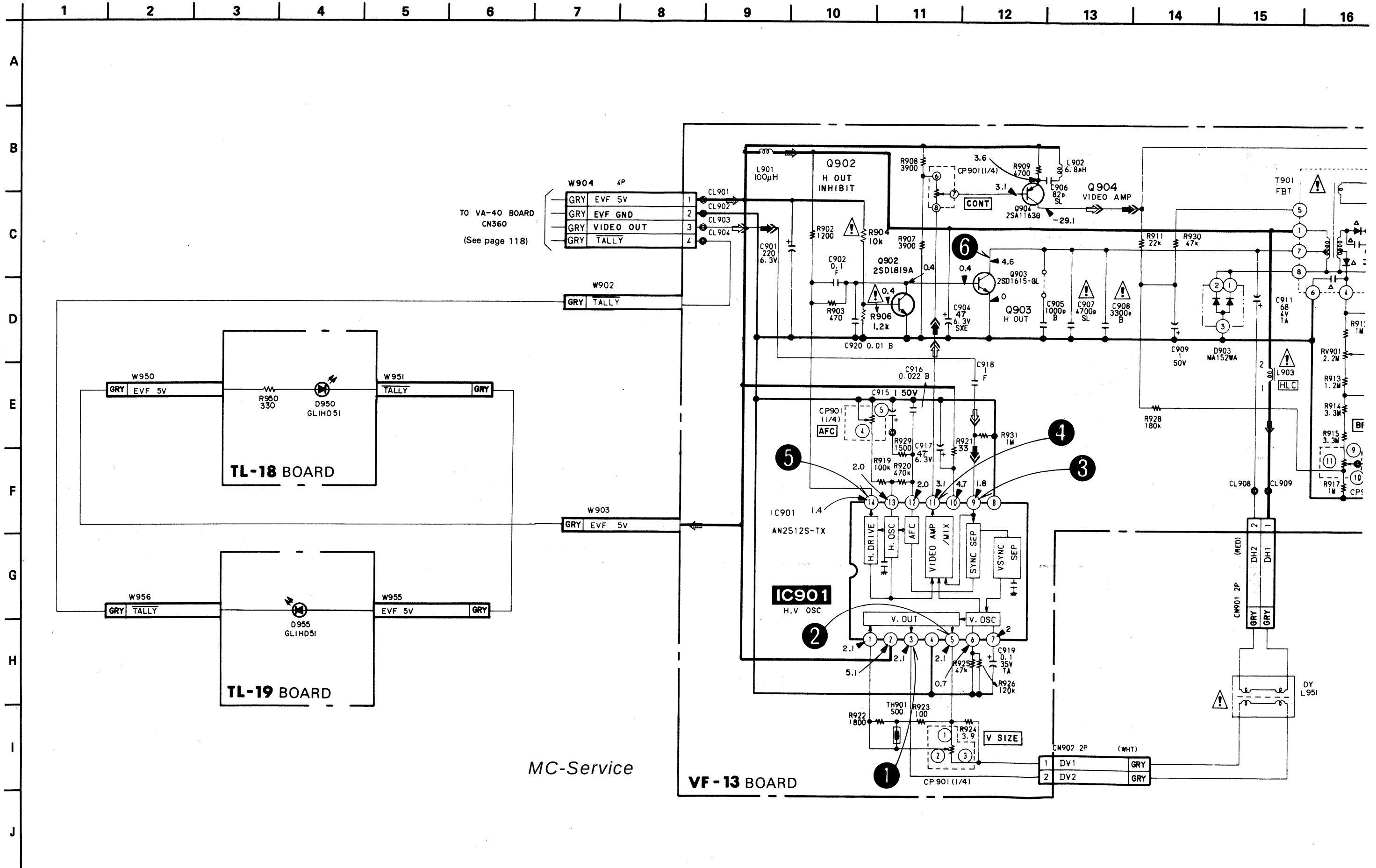


MC-Service

TL- 19 BOARD (COMPONENT SIDE)



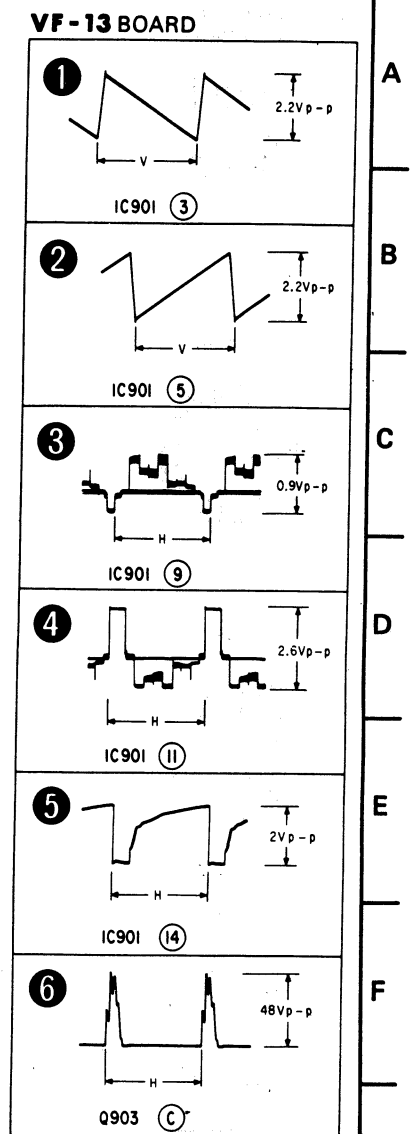
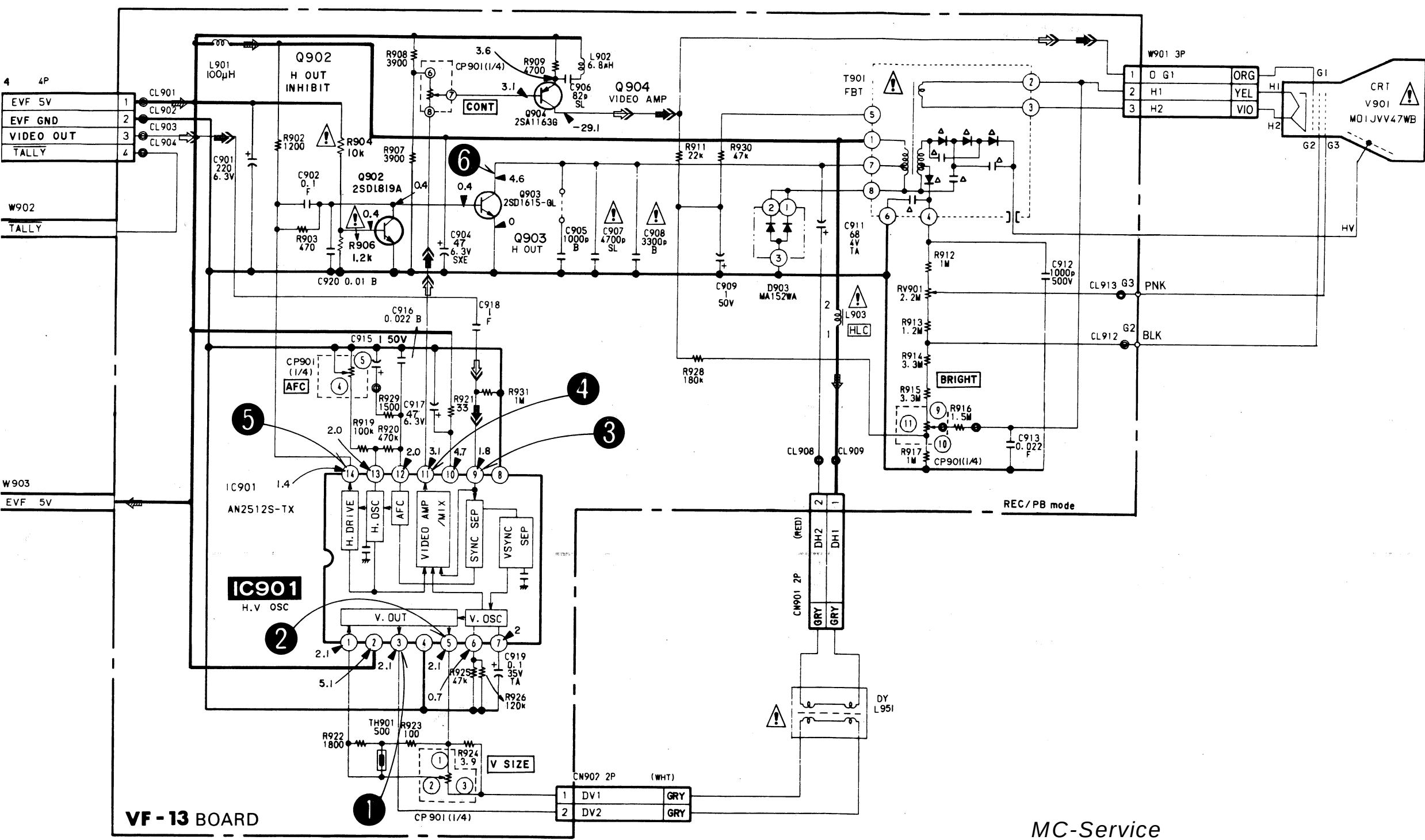
VIEWFINDER VIEWFINDER



MC-Service

VF-13 BOARD

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23



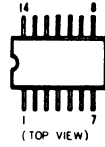
Note:

- Signal path
- ➡ : REC Y/CHROMA Signal
- ➡ : PB Y/CHROMA Signal

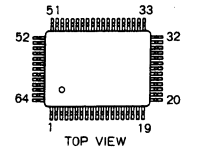
MC-Service

4-9. SEMICONDUCTORS

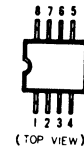
AN2512S
μPD4066BG



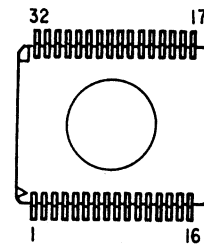
CXA1200Q
MB670493
μPD7503G-A49
μPD78112GF-510



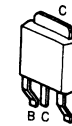
LA7293
MC34182MR
NJM2233AM
NJM3414M
μPC358G2
μPC393G2



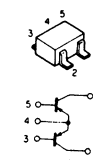
SBX1505



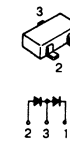
2SA1341



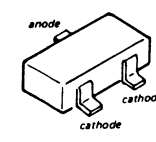
FMS1FE
XN1113



1SS123

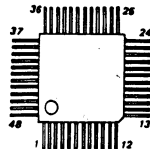


MA141WK

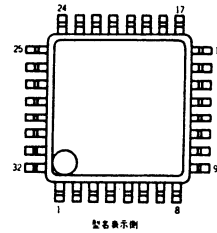


NOTE:
• The mecha number in supplied.
• The constr part are number in

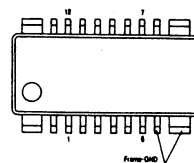
CXA1202R



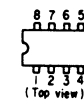
CXA1201Q



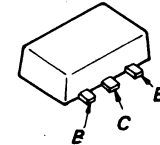
LB1631M



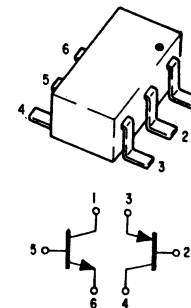
μPC311G2



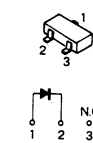
2SA1416-S-TD
2SB798
2SB1121-T
2SC3646-S-TD
2SD1615



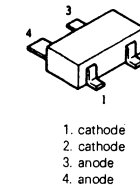
XN4601



1SS187

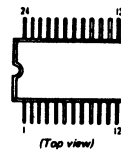


MA159

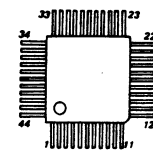


5-1. RIGHT

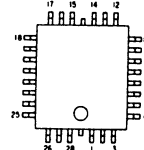
CX20114



CXA1204Q
μPD7507HG-532-22



MC146805F2FPSC8253-3F



2SA812-M6
2SA1163
2SA1226
2SA1576R
2SA1676
2SA1677
2SC1623
2SC2223-F13
2SC3395
2SC4081R
2SC4396
2SC4397
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DTA143EU
DTA144EU
DTC124EU
DTC144EU



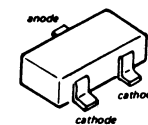
2SB926



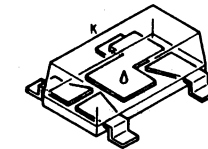
2SK94-X2
2SK300



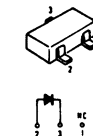
1S2835
MA141WA
MA151WA
MA152WA



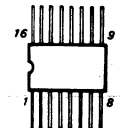
GL1HD51



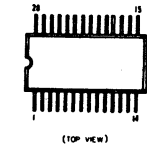
RD2.4M-B
RD4.7M-B2
RD6.2M-B1
RD9.1M-B1
SB05-05CP



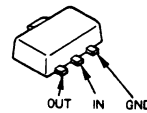
CX20115A
TC4053BF
μPD6142G-101



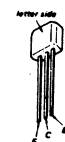
CXK58256MF-12LL



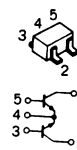
S-8054ALB-LM-S



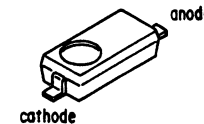
2SA1175



FMG2
FMW1
XN1213
XN1501



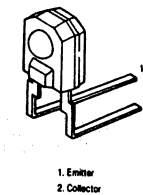
1T33C-01



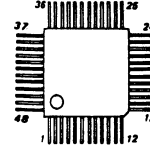
GL452S



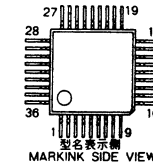
PT480FI



CXA1072R



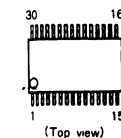
CXD1159Q



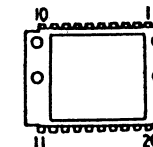
S-81350AG



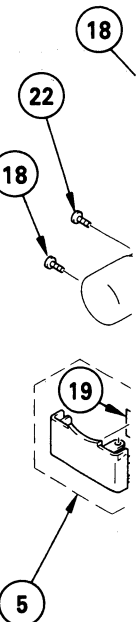
CXA1127MTP-1
CXL1501M



ICX026AK



MC-Service



No.	Pa
1	X-
2	X-
3	X-
4	3-
5	X-
6	X-
7	*3-
8	3-
9	*3-
10	*3-
11	3-
12	*3-

SECTION 5 EXPLODED VIEWS

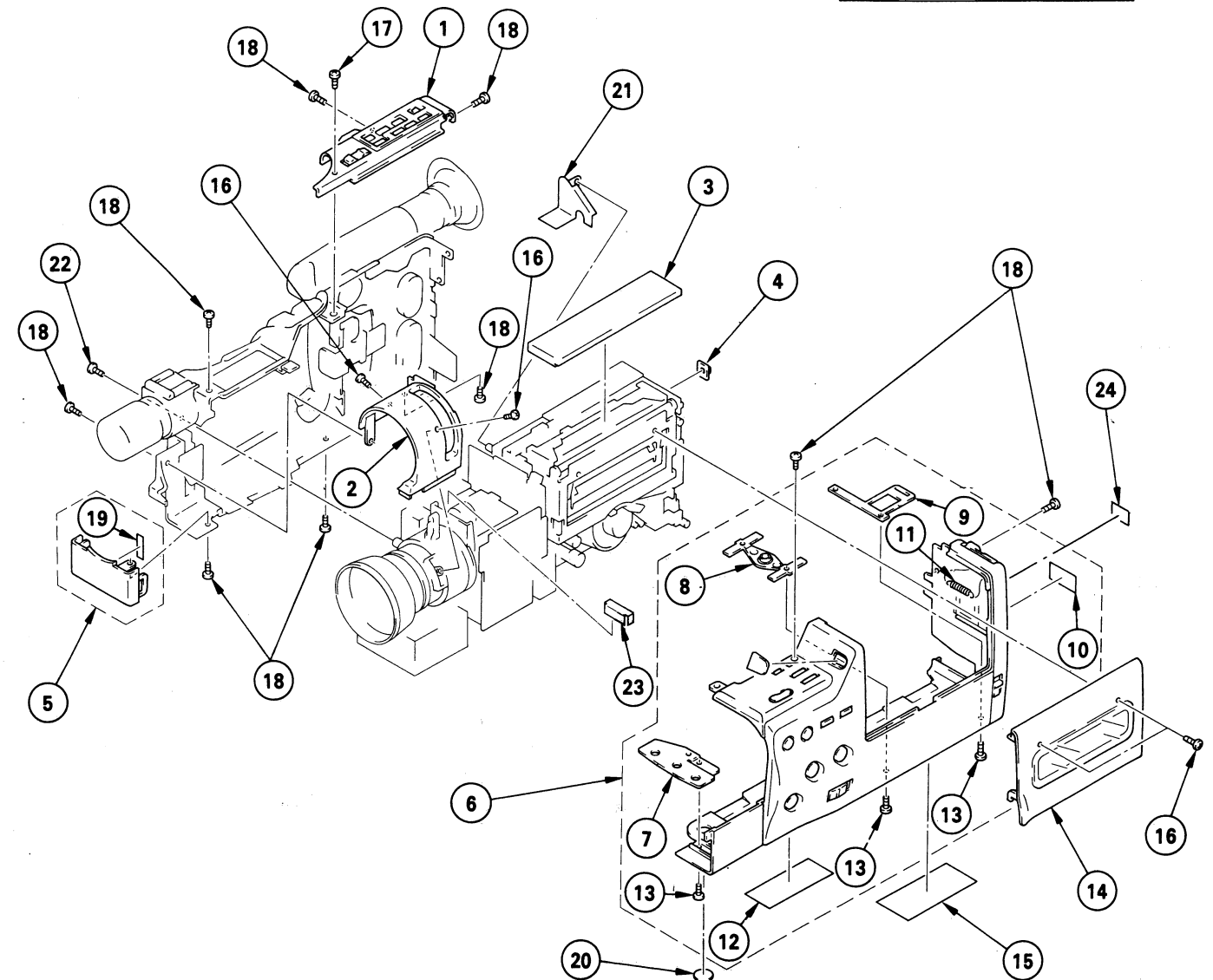
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

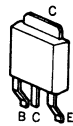
5-1. RIGHT CABINET ASSEMBLY



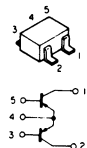
No.	Part No.	Description
1	X-3725-105-1	PANEL ASSY, VTR
2	X-3724-552-1	COVER ASSY, LENS
3	X-3725-104-1	LID ASSY, LS
4	3-724-593-01	KEY TOP
5	X-3724-549-1	PLATE ASSY, LIGHT TRANSMISSION
6	X-3725-106-1	CABINET (R) ASSY
7	*3-726-534-01	JOINT (LOWER)
8	3-724-507-01	SCREW, TRIPOD
9	*3-724-509-01	PLATE (LOWER), STRAP
10	*3-719-683-01	LABEL, BATTERY FITTING
11	3-571-832-00	SPRING, TENSION
12	*3-703-034-21	LABEL, CAUTION

Remark	No.	Part No.	Description	Remark
	13	3-719-381-01	SCREW (M2X4)	
	14	X-3725-103-1	LID ASSY, CASSETTE	
	15	*3-726-519-01	LABEL, MODEL NUMBER (U/C)	
		*3-728-678-01	LABEL, MODEL NUMBER (E)	
19	16	3-713-791-01	SCREW (M1.7X5), TAPPING, P2	7-13
	17	3-713-786-41	SCREW (M2X8)	
	18	3-719-381-01	SCREW (M2X4)	
	19	*2-532-810-00	CUSHION, 15X5X0.3	
	20	3-725-181-01	CAP, LOWER, AF	
	21	*3-725-119-01	RETAINER, FPC	
	22	3-713-790-41	SCREW (M2X10), TAPPING, P3	
	23	3-728-610-02	PLATE, LIGHT INTERCEPTION	
	24	*3-704-256-01	LABEL, CAUTION (US, E MODEL)	

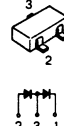
2SA1341



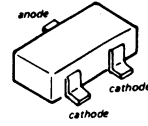
FMS1FE
XN1113



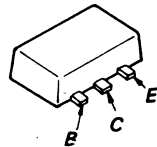
1SS123



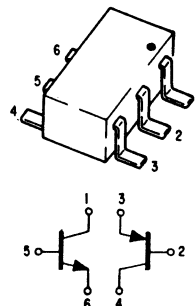
MA141WK



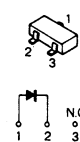
2SA1416-S-TD
2SB798
2SB1121-T
2SC3646-S-TD
2SD1615



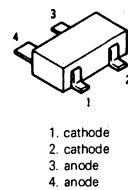
XN4601



1SS187



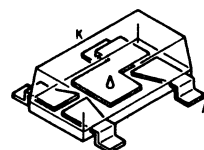
MA159



2SB926



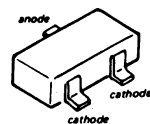
GL1HD51



RD2.4M-B
RD4.7M-B2
RD6.2M-B1
RD9.1M-B1
SB05-05CP



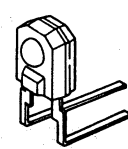
1S2835
MA141WA
MA151WA
MA152WA



GL452S



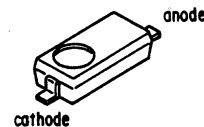
PT480FI



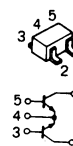
2SK94-X2
2SK300



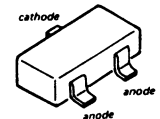
1T33C-01



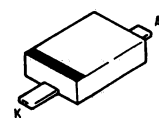
FMG2
FMW1
XN1213
XN1501



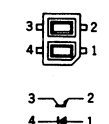
1S2837



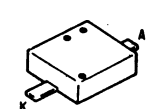
MA110



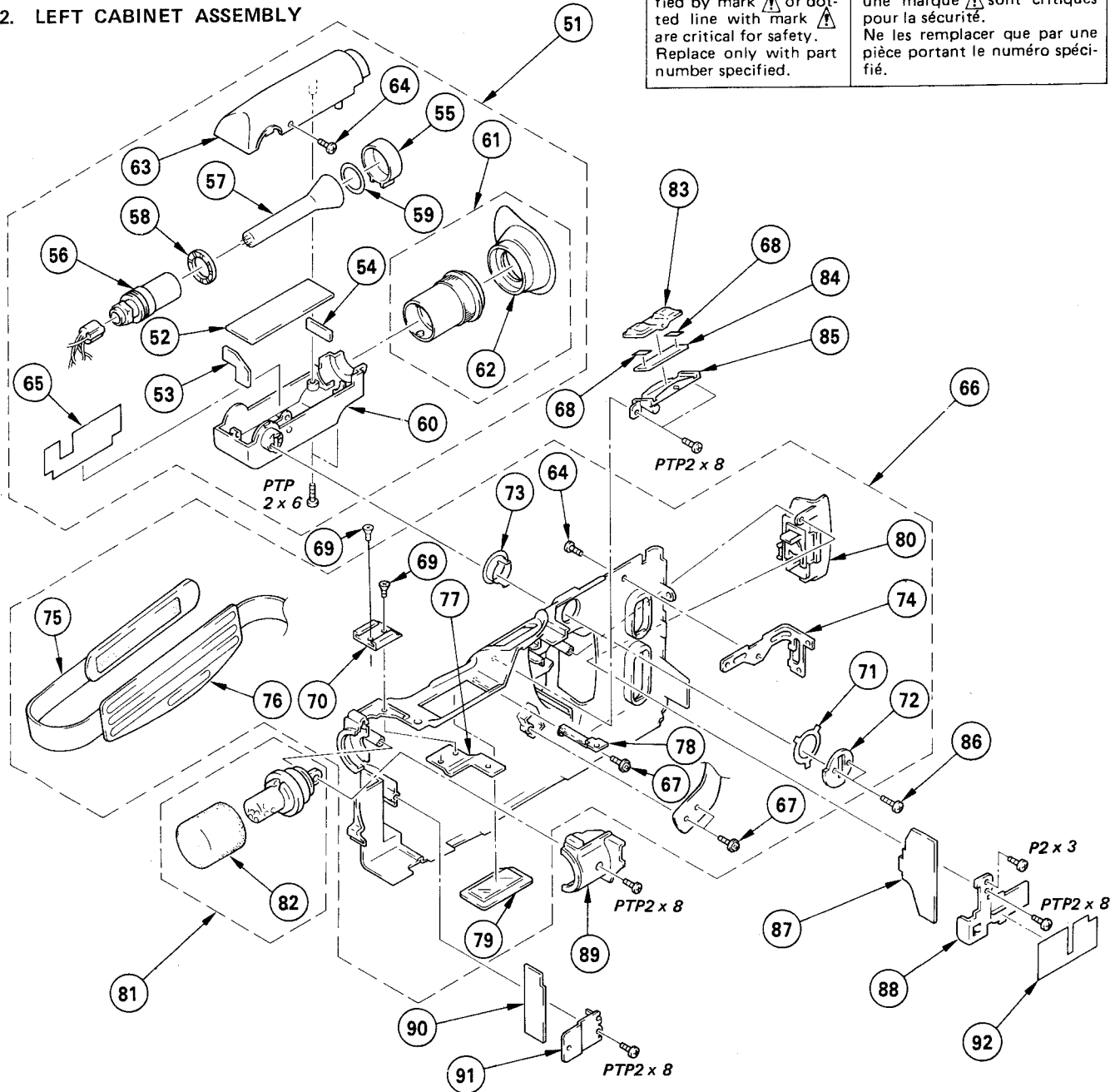
TLP907-0



MA111



5-2. LEFT CABINET ASSEMBLY

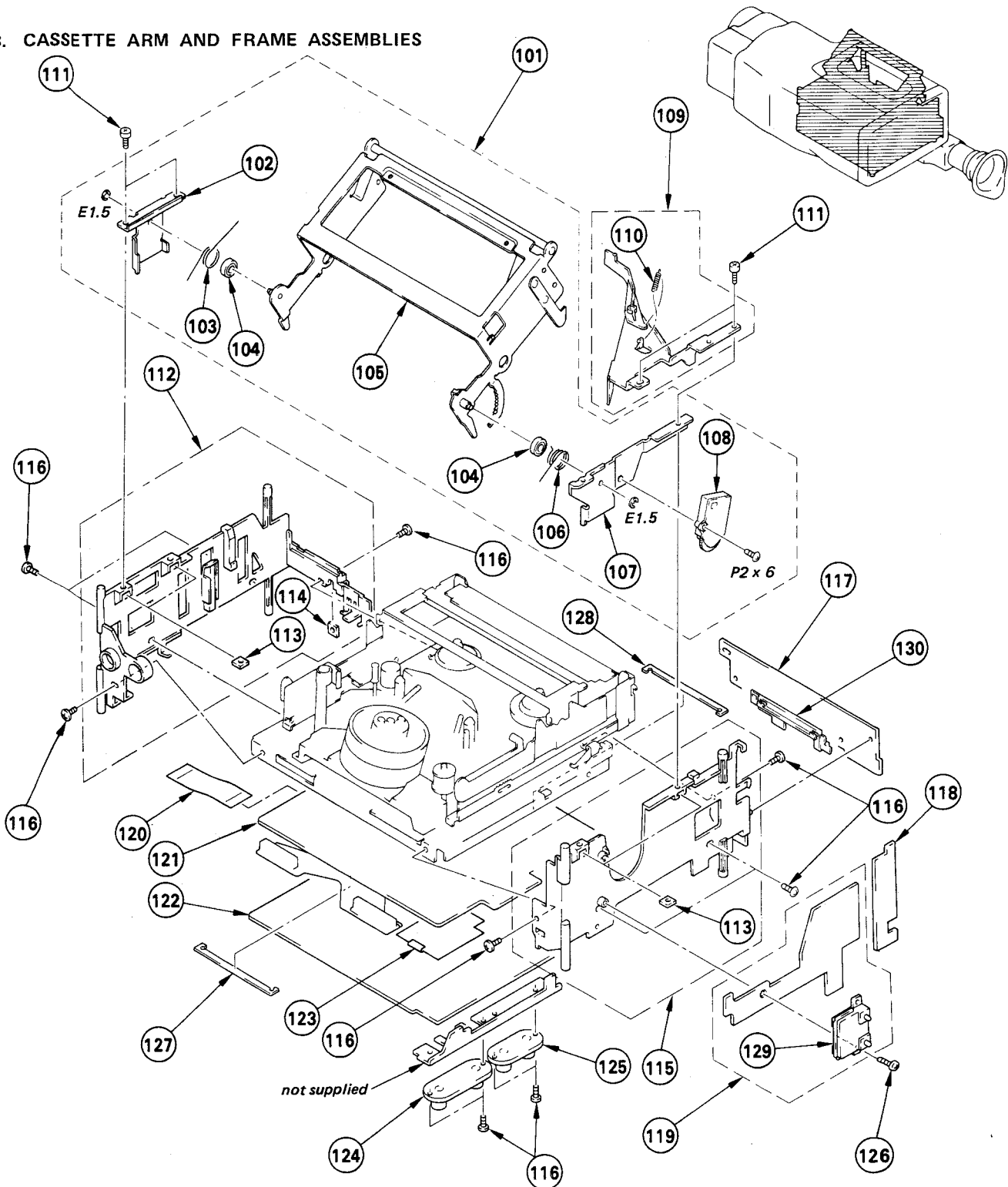


Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

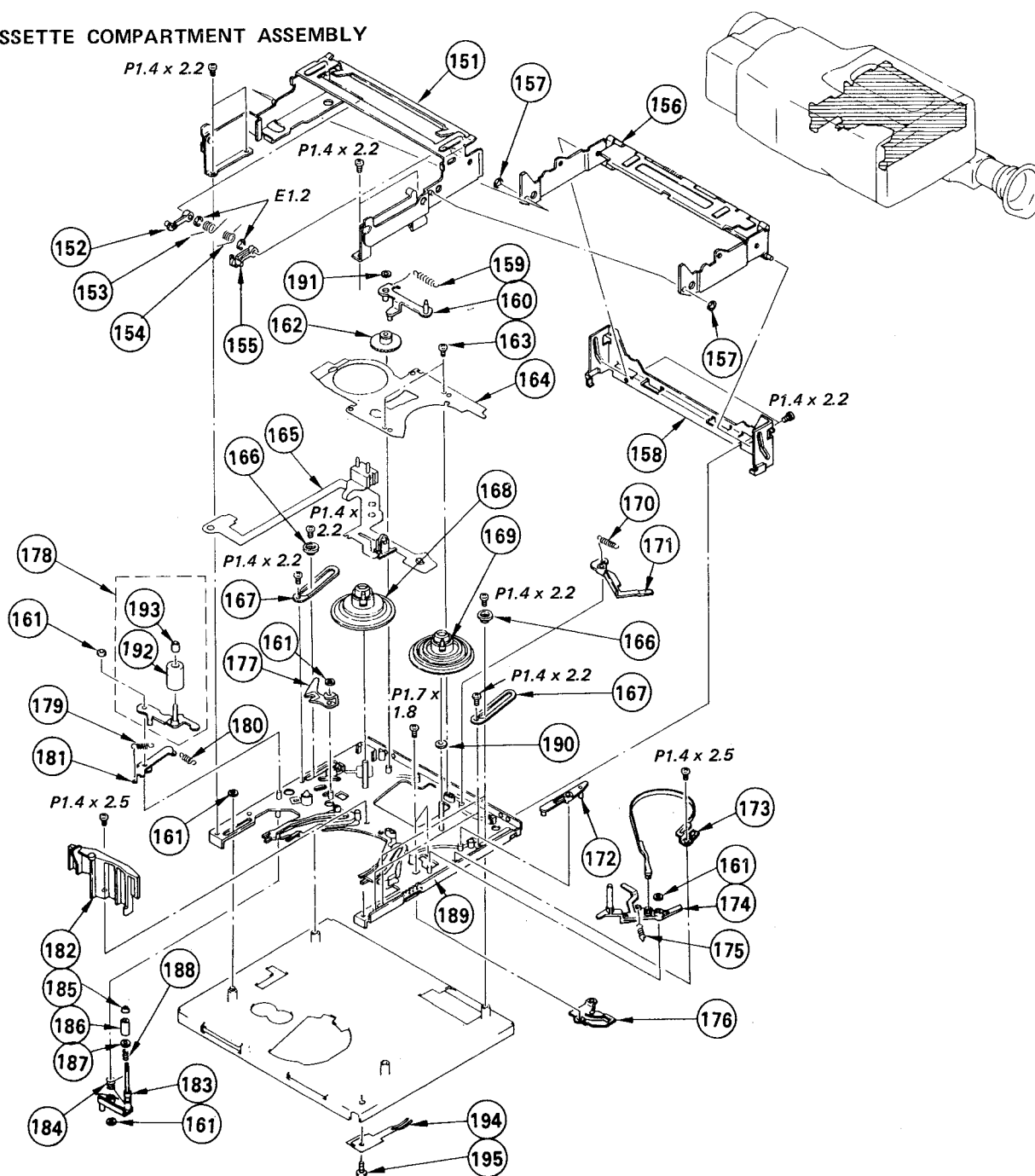
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	A-7019-093-A	EVF BLOCK ASSY	52-65	72	3-724-513-01	PLATE, LOCK	
52	*A-7061-188-A	VF-13 BOARD, COMPLETE		73	3-724-514-01	SLEEVE, EVF	
53	*A-7070-645-A	TL-18 BOARD, COMPLETE		74	3-724-525-01	BRACKET (UPPER), STRAP	
54	*A-7070-646-A	TL-19 BOARD, COMPLETE		75	3-724-582-01	BELT, GRIP	
55	X-3724-509-1	HOLDER ASSY, CRT		76	3-724-591-01	PAD, GRIP	
56	 1-451-310-21	DEFLECTION YOKE (B/W) (L951)		77	*3-726-505-01	SHEET METAL, ACC	
57	 1-546-065-11	CATHODE-RAY TUBE, B/W (MOIJVV47WB) (V901)		78	*3-726-507-01	JOINT, DL	
58	3-724-549-01	LOCK, CRT		79	*3-726-531-01	WINDOW, INDICATION, DDS	
59	3-724-570-01	RING, CRT FIXED		80	X-3724-564-1	BASE ASSY, SP	
60	A-7080-486-A	CABINET (LOWER) ASSY, EVF		81	1-542-101-11	MICROPHONE (C-2020)	82
61	A-7090-807-A	HOLDER BLOCK ASSY, FINDER		82	X-2356-712-1	WIND SCREEN ASSY	
62	3-724-544-02	EYE CUP	62	83	3-724-526-01	BUTTON, ZOOM	
63	X-3724-508-1	CABINET (UPPER) ASSY, EVF		84	*A-7070-678-A	ZM-8 BOARD, COMPLETE	
64	3-719-381-01	SCREW (M2X4)		85	3-724-527-01	BASE, ZOOM BUTTON	
65	*3-725-156-01	INSULATOR (B), EVF		86	3-713-792-01	SCREW (M2X10)	
66	A-7080-572-A	CABINET (L) BLOCK ASSY	64, 67, 69-80	87	A-7070-679-A	SW-92 BOARD, COMPLETE	
67	3-669-480-21	+ PTPWH 2		88	*3-724-569-01	SHEET METAL, SP	
68	*2-532-810-00	CUSHION, 15X5X0.3		89	3-725-178-01	HOUSING, MICROPHONE	
69	3-713-787-01	SCREW (M2X4)		90	*A-7061-168-A	MC-24 BOARD, COMPLETE	
70	3-724-511-01	SHOE, ACCESSORY		91	3-726-508-01	SHEET METAL, MC	
71	3-724-512-01	SPRING		92	*3-725-153-01	SHEET, INSULATING, SHEET METAL	

5-3. CASSETTE ARM AND FRAME ASSEMBLIES



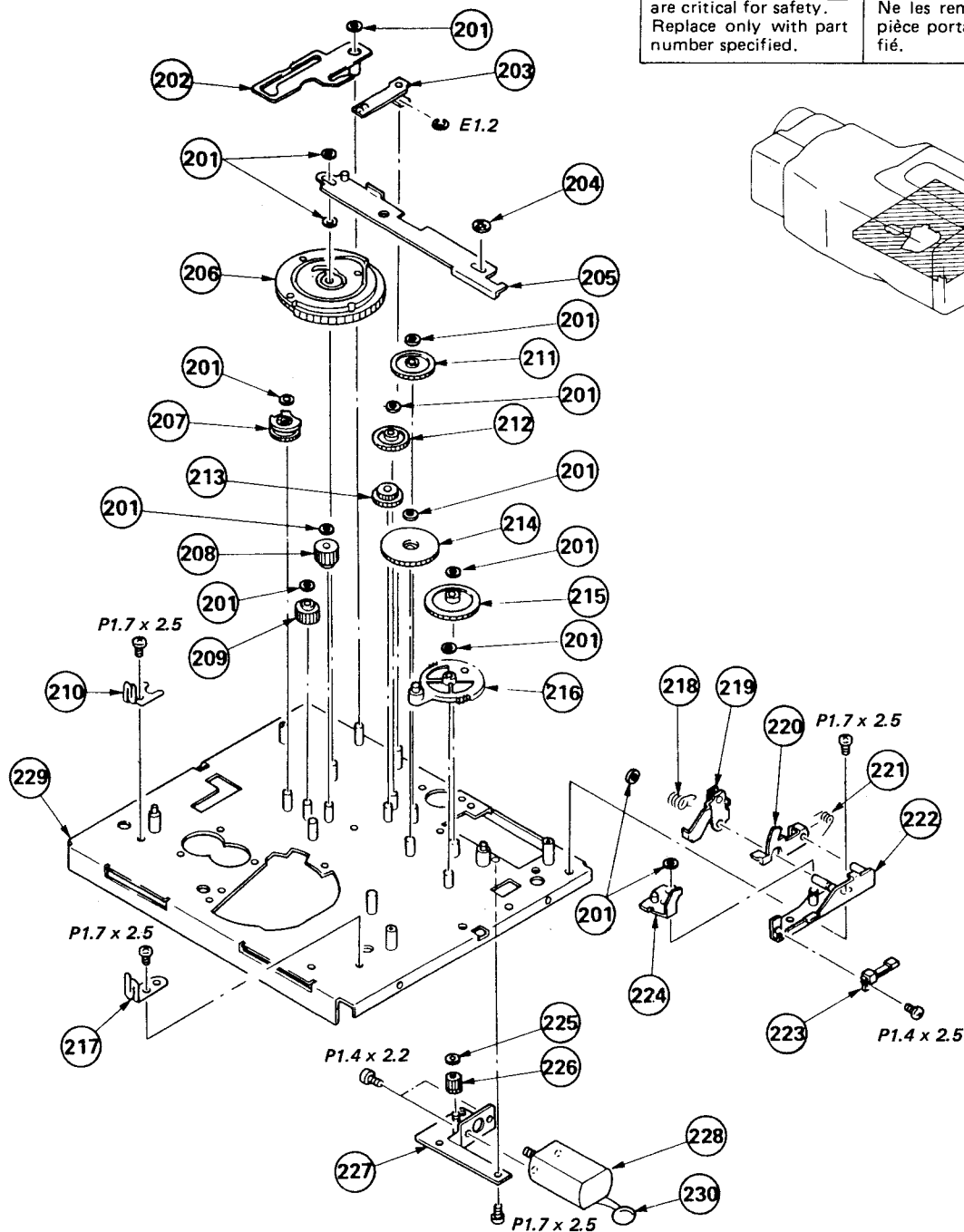
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	A-7040-141-A	ARM BLOCK ASSY (3), CASSETTE	102-108	116	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
102	*3-719-606-01	PLATE (T2) (M), SIDE		117	*A-7070-677-A	FV-1 BOARD, COMPLETE	
103	3-695-582-01	SPRING, TORSION		118	*A-7070-639-A	EJ-4 BOARD, COMPLETE	
104	3-695-512-02	COLLAR, CASSETTE ARM		119	*A-7070-730-A	PA-13 BOARD, COMPLETE	129
105	X-3712-034-4	ARM ASSY (2), CASSETTE		120	1-574-083-11	CABLE, FLAT (1.0MM PITCH) 15P	
106	3-695-581-01	SPRING, TORSION		121	*A-7061-282-A	SS-86 BOARD, COMPLETE	128
107	3-695-641-01	PLATE (S2), SIDE		122	*A-7061-165-A	VA-40 BOARD, COMPLETE	
108	3-681-528-11	DAMPER		123	*3-726-558-01	PLATE, SHIELD, VA-SS	
109	A-7040-140-B	GUARD BLOCK ASSY, TAPE	110	124	1-537-142-11	TERMINAL BOARD (AV OUT) (J361)	
110	3-695-718-01	SPRING, TENSION		125	1-565-298-11	JACK, PIN 2P (AV IN) (J360)	
111	3-719-697-01	SCREW (M1.7X5), SPECIAL HEAD		126	3-719-601-01	SCREW (B2X5), TAPPING	
112	*X-3724-503-1	FRAME (F) ASSY, MD	113, 114	127	*3-725-135-01	REINFORCEMENT, SS-MD	
113	3-716-418-01	NUT, FRAME PLATE		128	*3-725-136-01	REINFORCEMENT, VA-SS	
114	3-718-233-01	NUT, PLATE		129	1-535-658-11	TERMINAL BOARD	
115	*X-3724-504-1	FRAME (R) ASSY, MD	113	130	3-724-537-01	HOLDER, FV PC BOARD	

5-4. LS CASSETTE COMPARTMENT ASSEMBLY



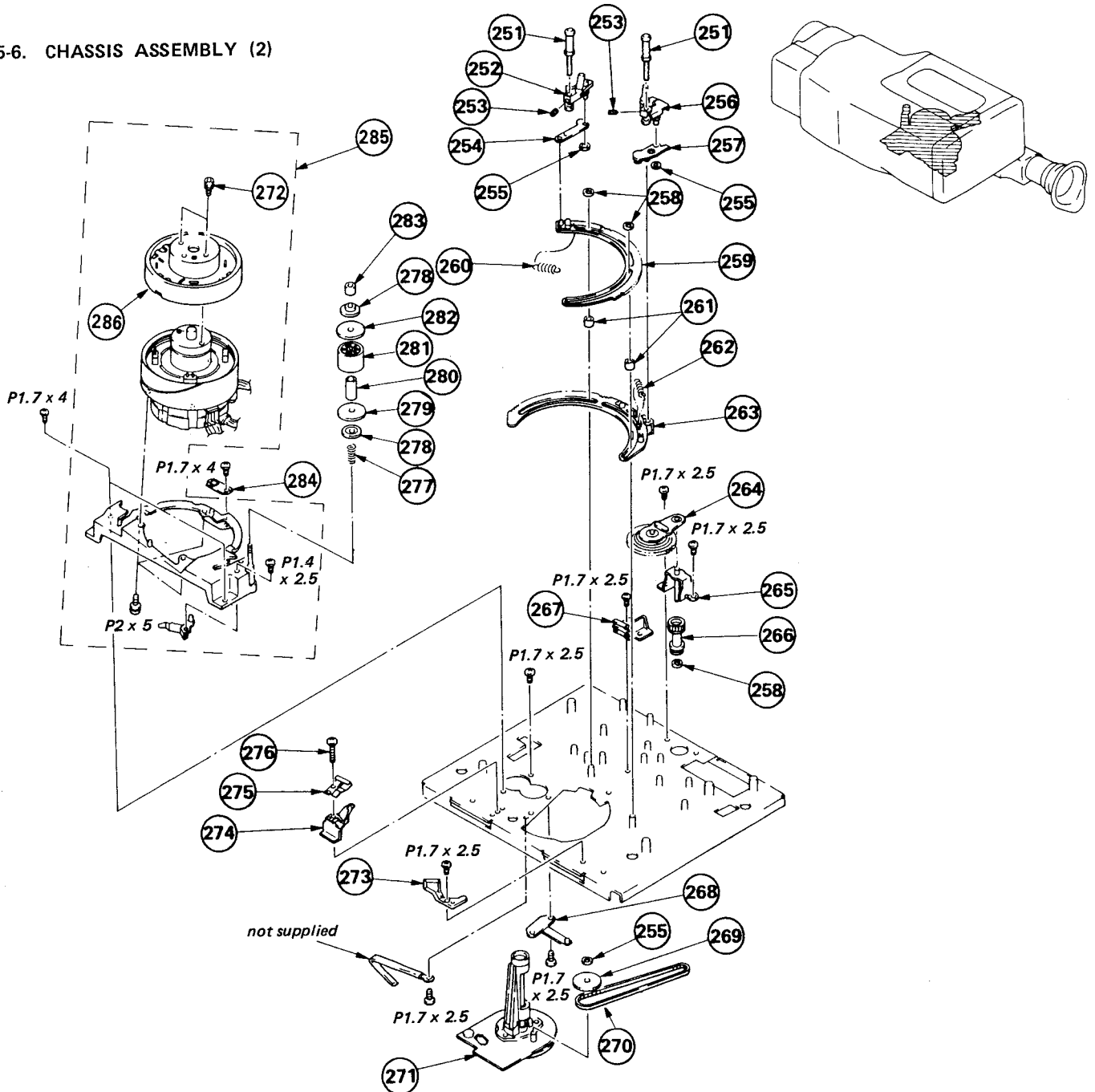
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	X-3695-447-6	COMPARTMENT ASSY, CASSETTE, LS		174	X-3712-019-1	ARM ASSY (2), TG1	
152	3-695-595-01	RETAINER (T), CASSETTE		175	3-695-591-01	SPRING, TENSION	
153	3-695-605-01	SPRING, TORSION		176	3-695-733-01	PLATE, CAM, LS	
154	3-695-604-01	SPRING, TORSION		177	X-3712-022-1	ARM (B) ASSY (2), PINCH	
155	3-695-594-01	RETAINER (S), CASSETTE		178	X-3712-032-2	ARM (C) ASSY (2), PINCH	192, 193
156	X-3695-448-3	ARM ASSY, BLIND		179	3-695-622-01	SPRING, TENSION	
157	3-669-465-00	WASHER (1.5), STOPPER		180	3-695-719-01	SPRING, TENSION	
158	3-695-646-01	ARM, LS		181	X-3695-415-1	PINCH LEVER ASSY	
159	3-695-718-01	SPRING, TENSION		182	3-695-624-01	BASE, PROTECT	
160	X-3712-037-1	LEVER (A) ASSY (2)		183	X-3712-027-1	ARM ASSY (2), TG7	
161	3-315-384-31	WASHER, STOPPER		184	3-695-541-01	SPRING	
162	X-3712-025-1	GEAR ASSY, TS		185	3-712-158-01	FLANGE, UPPER, TG7	
163	3-699-402-01	SCREW (M1.3X5.5), TAPPING		186	3-712-160-01	SLEEVE (2), TG7	
164	3-712-165-01	PLATE (2), STOPPER		187	3-712-159-01	FLANGE, LOWER, TG7	
165	A-7060-693-A	FP-53 BOARD, COMPLETE		188	3-712-157-01	SPRING, COMPRESSION	
166	3-695-698-01	GUIDE, LS		189	X-3713-962-1	CHASSIS ASSY (2), LS	
167	3-695-697-01	SPRING, LEAF, LS		190	3-701-444-01	WASHER, 6	
168	X-3695-436-1	TABLE ASSY, REEL, TAKE-UP		191	3-321-393-01	WASHER, STOPPER	
169	X-3712-038-1	TABLE ASSY (2), REEL, SUPPLY	190	192	X-3695-416-1	PINCH ROLLER ASSY	
170	3-542-475-00	SPRING, TENSION		193	3-695-569-01	SLEEVE (P), PINCH INNER	
171	3-712-151-01	BRAKE (2), SOFT		194	*3-725-151-01	PLATE, GROUND, RP	
172	3-695-735-04	ARM, TG1 RELEASE		195	3-719-695-21	SCREW (M1.7X2.5), SPECIAL HEAD	
173	X-3695-432-1	BAND ASSY, TG1					

5-5. CHASSIS ASSEMBLY (1)



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	3-315-384-31	WASHER, STOPPER		216	X-3695-417-1	GEAR (C) ASSY, LS	
202	X-3712-023-1	ARM (A) ASSY (2), PINCH		217	3-695-705-01	SPRING (S)	
203	3-695-589-01	LEVER (B), REEL LOCK		218	3-713-937-01	SPRING (A) (2)	
204	3-669-465-00	WASHER (1.5), STOPPER		219	X-3695-418-1	ARM ASSY, LOCK	
205	X-3695-439-4	SLIDER ASSY, M		220	3-695-574-01	ARM, RETURN PREVENTION	
206	X-3712-031-1	CAM ASSY (2)		221	3-695-579-01	SPRING (B), TORSION	
207	3-712-156-01	GEAR (M) (2), THREADING		222	X-3712-018-1	BASE ASSY (2), LOCK	
208	3-695-537-01	GEAR (T), THREADING		223	1-553-226-00	SWITCH, LEAF (CASSETTE DOWN) (S902)	
209	3-695-536-01	GEAR (S), THREADING		224	X-3695-438-1	ARM ASSY, EJECT	
210	3-695-706-01	SPRING (T)		225	3-321-393-01	WASHER, STOPPER	
211	3-695-559-01	GEAR (B), THREADING		226	3-712-150-01	WHEEL, WORM	
212	3-695-724-01	GEAR (D), THREADING		227	X-3712-017-1	HOLDER ASSY, MOTOR	
213	3-712-162-02	GEAR (C) (2), THREADING		228	⚠.1-541-508-11	MOTOR, DC (LA14-323F) (LOADING) (M903)	
214	3-695-714-01	GEAR (A), LS		229	X-3712-036-1	CHASSIS ASSY (2), MECHANICAL	
215	3-695-563-04	GEAR (B), LS		230	1-161-032-00	CAP, CERAMIC 0.01MF (C901)	

5-6. CHASSIS ASSEMBLY (2)

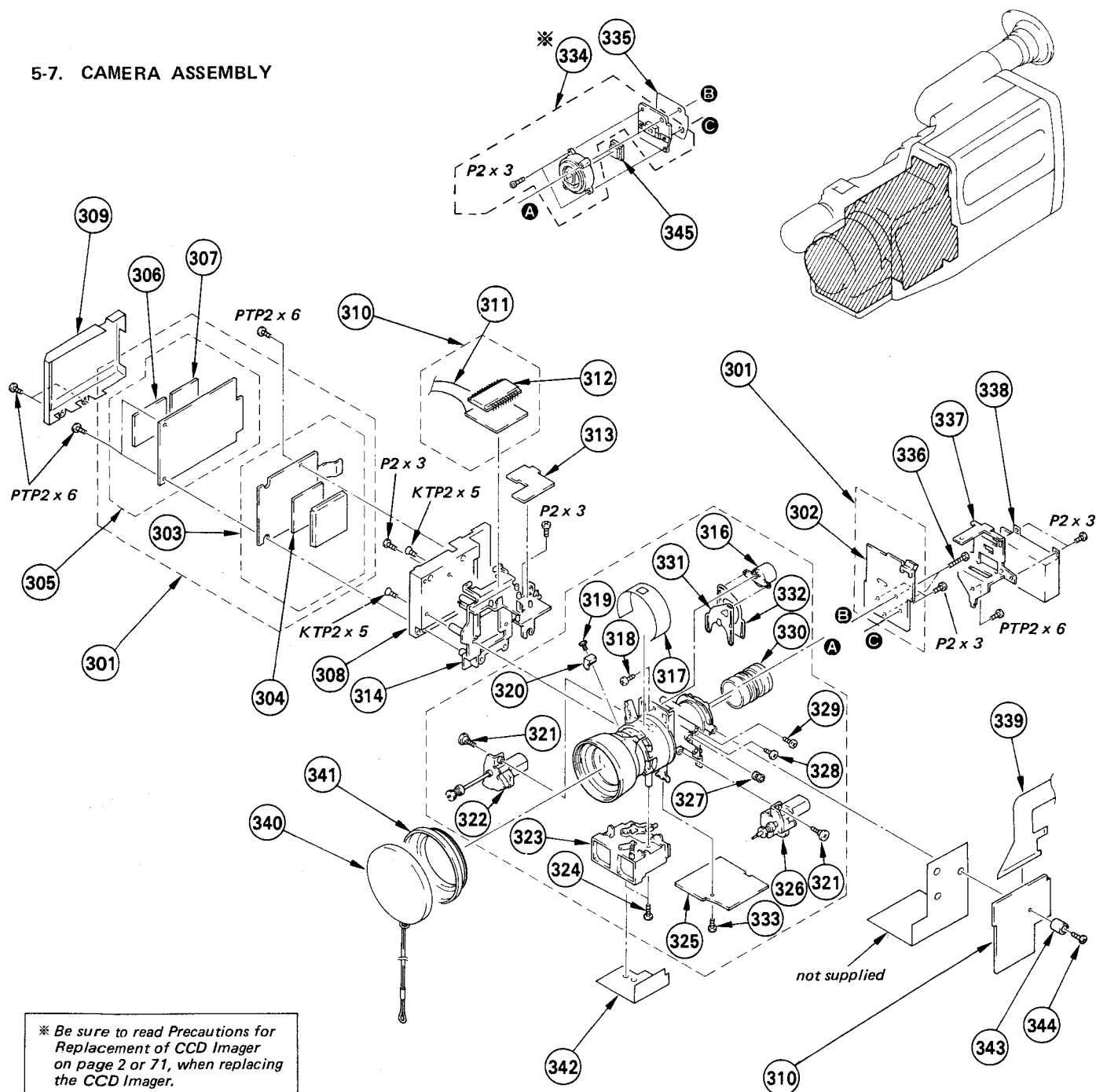


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	X-3712-029-1	ROLLER ASSY (2), GUIDE		269	X-3695-413-1	GEAR ASSY, CHANGE	
252	X-3712-030-1	BASE ASSY (2), TG5		270	3-695-637-01	BELT, RELAY	
253	3-695-770-01	SCREW, GR LOCK		271	8-835-309-01	MOTOR, DC BHF-3301C (CAPSTAN) (M902)	
254	3-695-545-01	JOINT, T		272	3-686-440-01	SCREW (2X5), BOLT WASHER	
255	3-321-393-01	WASHER, STOPPER		273	3-695-627-01	STOPPER, SLIDER, S	
256	X-3712-028-1	BASE ASSY (2), TG4		274	3-695-628-01	STOPPER, SLIDER, T	
257	X-3695-429-1	JOINT ASSY, S		275	3-695-677-01	SPRING (T), LEAF	
258	3-315-384-31	WASHER, STOPPER		276	3-695-519-01	SCREW, FITTING, LEAF SPRING(T)	
259	X-3695-414-1	SLIDER (T) ASSY, THREADING		277	3-695-532-01	SPRING, COMPRESSION	
260	3-695-773-01	SPRING, TENSION		278	3-695-727-01	RETAINER, FLANGE, UPPER	
261	3-695-544-01	ROLLER, GUIDE		279	3-695-794-01	FLANGE, LOWER, TG2	
262	3-695-772-01	SPRING, TENSION		280	3-695-530-01	SLEEVE, TG2	
263	X-3695-428-1	SLIDER (S) ASSY, THREADING		281	3-712-164-01	ROLLER (2), TG2	
264	X-3712-024-1	ARM ASSY (2), GEAR		282	3-695-528-01	FLANGE, TG2	
265	X-3712-020-1	BASE ASSY (2), MIDWAY PULLEY		283	3-695-529-01	NUT, TG2	
266	X-3712-021-1	PULLEY ASSY (2), MIDWAY		284	1-807-238-11	SENSOR, DEW CONDENSATION	
267	3-712-163-01	SUPPORT (2), SLIDER		285	A-7048-173-A	DRUM ASSY (DGR-20B-R)	272, 286
268	1-535-574-11	TERMINAL, SHAFT GROUND		286	A-7049-130-A	DRUM ASSY, UPPER (DGR-20-R)	

Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-7. CAMERA ASSEMBLY



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	*A-7061-190-A	VC BOARD BLOCK, COMPLETE	302-307	323	3-707-449-01	BLOCK UNIT, AF	
302	*A-7061-161-A	VC-38 BOARD, COMPLETE		324	3-707-450-01	SCREW, AF BLOCK CLAMP	
303	*A-7061-162-A	VC-39 BOARD, COMPLETE	304	325	3-707-451-01	PC BOARD UNIT, AF	
304	A-7068-127-A	DT-71 (HIC) BOARD, COMPLETE		326	3-707-452-01	MOTOR UNIT, ZOOM (M906)	
305	*A-7061-163-A	VC-40 BOARD, COMPLETE	306, 307	327	3-707-453-01	ROLLER, ECCENTRIC	
306	A-7068-128-A	MX-7 (HIC) BOARD, COMPLETE		328	3-707-454-01	SCREW	
307	A-7068-129-A	PR-20 (HIC) BOARD, COMPLETE		329	3-707-455-01	SCREW, RELAY SET	
308	*X-3724-550-1	CASE (A) ASSY, SHIELD, VC		330	3-707-456-01	MIRROR TUBE UNIT, RELAY	
309	*X-3724-551-1	CASE (B) ASSY, SHIELD, VC		331	3-707-457-01	(B) ASSY, IRIS FEATHER	
310	*A-7061-167-A	FC-16 BOARD, COMPLETE	311, 312	332	3-707-458-01	FEATHER, IRIS (A)	
311	1-626-232-11	FP-123 FLEXIBLE BOARD (19P)		333	3-707-459-01	SCREW, AF PC BOARD CLAMP	
312	1-808-385-11	L.C.D		334	A-7090-878-A	CCD ASSY (CCD IMAGER)	
313	*A-7070-637-A	FD-6 BOARD, COMPLETE		335	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
314	3-725-179-01	FRAME, CAMERA		336	3-713-790-51	SCREW (M2X16), TAPPING, P3	
315	1-547-284-11	LENSE, ZOOM (VCL-906XB)	316-333	337	3-725-182-01	JOINT	
316	3-707-442-01	METER, IG (IRIS) (M904)		338	1-464-993-11	CONVERTER, DC-DC	
317	3-707-443-01	SHEET, ZOOM		339	1-626-233-11	FP-124 FLEXIBLE BOARD	
318	3-707-444-01	SCREW, IG METER CLAMP		340	A-7090-806-A	CAP ASSY, HOOD	
319	3-707-445-01	SCREW, (N) STOPPER CLAMP		341	3-724-589-01	HOOD, LENZ	
320	3-707-446-01	STOPPER, (N)		342	3-726-533-01	COVER, AF	
321	3-707-447-01	SCREW, MOTOR CLAMP		343	*3-725-184-01	RETAINER, FC	
322	3-707-448-01	MOTOR UNIT, AF (M905)		344	3-719-601-01	SCREW (B2X5), TAPPING	
				345	A-7090-879-A	KIT, FILTER, OPTICAL	

SECTION 6 ELECTRICAL PARTS LIST

FP-53

FC-16

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- SEMICONDUCTORS
In each case, U: μ , for example:
UA...: μ A..., UPA...: μ PA...,
UPB...: μ PB..., UPC...: μ PC...,
UPD...: μ PD...
- CAPACITORS
MF: μ F, PF: μ μ F
- COILS
MMH: mH, UH: μ H

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
A-7060-693-A	FP-53	BOARD, COMPLETE *****		Q163	8-729-905-23	TRANSISTOR 2SA1576R	
3-713-904-01	HOLDER (2), LED			Q164	8-729-905-23	TRANSISTOR 2SA1576R	
	DIODE			Q165	8-729-109-42	FET 2SK94-X2	
D302	8-719-940-81	LED GL452S		Q166	8-729-905-35	TRANSISTOR 2SC4081R	
D303	8-719-801-55	TLP907-0		Q167	8-729-903-97	TRANSISTOR FMS1FE	
D304	8-719-801-55	TLP907-0		Q168	8-729-905-35	TRANSISTOR 2SC4081R	
	SWITCH			Q190	8-729-810-19	TRANSISTOR 2SC4396-TL	
S301	1-570-869-11	SWITCH, PUSH (2 KEY)		Q191	8-729-905-23	TRANSISTOR 2SA1576R	
*****				Q192	8-729-903-97	TRANSISTOR FMS1FE	
*A-7061-167-A	FC-16	BOARD, COMPLETE *****			RESISTOR		
	CAPACITOR			R120	1-216-097-00	METAL GLAZE 100K 5%	1/10W
C160	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V		R121	1-216-097-00	METAL GLAZE 100K 5%	1/10W
C161	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V		R122	1-216-097-00	METAL GLAZE 100K 5%	1/10W
C162	1-162-638-11	CERAMIC CHIP 1MF 16V		R123	1-216-097-00	METAL GLAZE 100K 5%	1/10W
C163	1-162-638-11	CERAMIC CHIP 1MF 16V		R124	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C164	1-163-038-00	CERAMIC CHIP 0.1MF 25V		R125	1-216-097-00	METAL GLAZE 100K 5%	1/10W
C165	1-163-038-00	CERAMIC CHIP 0.1MF 25V		R126	1-216-097-00	METAL GLAZE 100K 5%	1/10W
C166	1-163-038-00	CERAMIC CHIP 0.1MF 25V		R127	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C190	1-163-033-00	CERAMIC CHIP 0.022MF 50V		R128	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C191	1-124-246-61	ELECT 6.8MF 20% 35V		R129	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C192	1-124-246-61	ELECT 6.8MF 20% 35V		R130	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C193	1-163-101-00	CERAMIC CHIP 22PF 5% 50V		R131	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C194	1-163-038-00	CERAMIC CHIP 0.1MF 25V		R132	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C195	1-163-105-00	CERAMIC CHIP 33PF 5% 50V		R133	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C196	1-163-021-00	CERAMIC CHIP 0.01MF 50V		R134	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C197	1-163-034-00	CERAMIC CHIP 0.033MF 50V		R135	1-216-073-00	METAL GLAZE 10K 5%	1/10W
	CONNECTOR			R136	1-216-097-00	METAL GLAZE 100K 5%	1/10W
CN191	*1-566-181-11	PIN, CONNECTOR (PC BOARD) 2P		R137	1-216-097-00	METAL GLAZE 100K 5%	1/10W
	TRIMMER			R138	1-216-097-00	METAL GLAZE 100K 5%	1/10W
CT190	1-141-331-11	CAP, VAR, TRIMMER (CHIP)		R139	1-216-073-00	METAL GLAZE 10K 5%	1/10W
	DIODE			R140	1-216-105-00	METAL GLAZE 220K 5%	1/10W
D160	8-719-404-12	DIODE MA159		R141	1-216-089-00	METAL GLAZE 47K 5%	1/10W
D161	8-719-105-73	ZENER DIODE RD4.7M-B2		R142	1-216-073-00	METAL GLAZE 10K 5%	1/10W
D190	8-719-105-99	ZENER DIODE RD6.2M-B1		R143	1-216-073-00	METAL GLAZE 10K 5%	1/10W
	IC			R144	1-216-073-00	METAL GLAZE 10K 5%	1/10W
IC190	8-759-142-12	IC UPD7503G-A49		R145	1-216-105-00	METAL GLAZE 220K 5%	1/10W
IC191	8-759-937-56	IC S-8054ALB-LM-S		R146	1-218-167-91	METAL GLAZE 330K 1%	1/10W
	TRANSISTOR			R147	1-216-530-00	METAL GLAZE 390K 1%	1/10W
Q160	8-729-905-23	TRANSISTOR 2SA1576R		R148	1-216-121-00	METAL GLAZE 1M 5%	1/10W
Q161	8-729-905-23	TRANSISTOR 2SA1576R		R149	1-216-115-00	METAL GLAZE 560K 5%	1/10W
				R160	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R161	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R162	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R163	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R164	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R165	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R166	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R167	1-216-097-00	METAL GLAZE 100K 5%	1/10W
				R168	1-216-093-00	METAL GLAZE 68K 5%	1/10W
				R169	1-216-748-11	METAL GLAZE 39K 5%	1/10W
				R170	1-216-129-00	METAL GLAZE 2.2M 5%	1/10W
				R171	1-216-115-00	METAL GLAZE 560K 5%	1/10W

FC-16**MC-24****VF-13**

Ref.No	Part No.	Description	Remark
R172	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R173	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R174	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R175	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R176	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R190	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R191	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R192	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R193	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R194	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R195	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R196	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R197	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R198	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R199	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
<u>SWITCH</u>			
S190	1-570-870-21	SWITCH, SLIDE (AUTO LOCK)	
S191	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (T 1)	
S192	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (T 2)	
S193	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (MEMO)	
S194	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (COLOR)	
S195	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (FOCUS)	
S196	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (BACK LIGHT)	
S197	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (SHUTTER SPEED)	
<u>TERMINAL PIN</u>			
TP190	*1-535-622-11	PIN, TERMINAL	
TP191	*1-535-622-11	PIN, TERMINAL	
<u>CRYSTAL</u>			
X190	1-527-997-21	VIBRATOR, CRYSTAL	

*A-7061-168-A MC-24 BOARD, COMPLETE			

<u>CAPACITOR</u>			
C585	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C586	1-124-225-00	ELECT 100MF 20% 6.3V	
C587	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C588	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C589	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C590	1-163-137-00	CERAMIC CHIP 680PF 10% 50V	
C591	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C592	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C593	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C594	1-162-638-11	CERAMIC CHIP 1MF 16V	
C595	1-163-081-00	CERAMIC CHIP 0.22MF 25V	
C596	1-124-225-00	ELECT 100MF 20% 6.3V	
C598	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C599	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	

Ref.No	Part No.	Description	Remark
C600	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C601	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
<u>CONNECTOR</u>			
CN585	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
<u>DIODE</u>			
D585	8-719-105-99	ZENER DIODE RD6.2M-B1	
<u>IC</u>			
IC585	8-759-820-51	IC LA7293M	
<u>JACK</u>			
J585	1-507-921-00	JACK (MIC)	
J586	1-563-454-11	JACK, MINIATURE (MIC DC)	
<u>TRANSISTOR</u>			
Q585	8-729-905-37	TRANSISTOR 2SC4081T106Q	
<u>RESISTOR</u>			
R585	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R586	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R587	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R588	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R589	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R590	1-249-405-11	CARBON 100 5% 1/4W	
R591	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R592	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R593	1-216-295-00	METAL GLAZE 0 5% 1/10W	
<u>SWITCH</u>			
S585	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	

*A-7061-188-A VF-13 BOARD, COMPLETE			

3-713-535-01 CUSHION, CRT			
*3-725-155-01 INSULATOR, FB			
<u>CAPACITOR</u>			
C901	1-126-369-11	ELECT 220MF 20% 6.3V	
C902	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C904	1-127-486-00	ELECT(SOLID) 47MF 20% 6.3V	
C905	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C906	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	
C907	1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	
C908	1-163-015-00	CERAMIC CHIP 0.0033MF 10% 50V	
C909	1-126-193-11	ELECT 1MF 20% 50V	
C911	1-131-388-00	TANTALUM 68MF 10% 3.15V	
C912	1-102-038-00	CERAMIC 0.001MF 99% 500V	

Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note:
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When indicating parts by reference number, please include the board name.

VF-13

TC-18

TC-19

VC-38

Ref.No	Part No.	Description	Remark
C913	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C915	1-126-193-11	ELECT 1MF	20% 50V
C916	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C917	1-135-098-21	TANTAL. CHIP 47MF	20% 6.3V
C919	1-135-070-00	TANTAL. CHIP 0.1MF	10% 35V
C920	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V

CONNECTOR

CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P

COMPOSITION CIRCUIT BLOCK

CP901	1-238-119-11	RES, ADJ
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CRYSTAL

CRT901	1-526-978-21	SOCKET ASSY, CRT
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DIODE

D903	8-719-400-20	DIODE MA152WA
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IC

IC901	8-759-420-01	IC AN2512S
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COIL

L901	Δ.1-408-421-00	INDUCTOR 100UH
L902	1-410-379-21	INDUCTOR CHIP 6.8UH
L903	Δ.1-459-858-11	COIL, FERRITE (HLC)

TRANSISTOR

Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q
Q903	8-729-106-64	TRANSISTOR 2SD1615
Q904	8-729-216-32	TRANSISTOR 2SA1163

RESISTOR

R902	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R903	1-216-041-00	METAL GLAZE 470 5%	1/10W
R904	Δ.1-216-073-00	METAL GLAZE 10K 5%	1/10W
R906	Δ.1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R907	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W
R908	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W
R909	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R911	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R912	1-216-121-00	METAL GLAZE 1M 5%	1/10W
R913	1-216-123-11	METAL GLAZE 1.2M 5%	1/10W
R914	1-216-133-00	METAL GLAZE 3.3M 5%	1/10W
R915	1-216-133-00	METAL GLAZE 3.3M 5%	1/10W
R916	1-216-125-00	METAL GLAZE 1.5M 5%	1/10W
R917	1-216-121-00	METAL GLAZE 1M 5%	1/10W
R919	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R920	1-216-113-00	METAL GLAZE 470K 5%	1/10W
R921	1-216-013-00	METAL GLAZE 33 5%	1/10W

Ref.No	Part No.	Description	Remark
R922	1-216-055-00	METAL GLAZE 1.8K 5%	1/10W
R923	1-216-025-00	METAL GLAZE 100 5%	1/10W
R924	1-216-306-11	METAL GLAZE 3.9 5%	1/10W
R925	1-216-336-11	METAL GLAZE 47K 1%	1/10W
R926	1-218-163-11	METAL GLAZE 120K 1%	1/10W
R928	1-216-870-11	METAL GLAZE 180K 1%	1/10W
R929	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
R930	1-216-089-00	METAL GLAZE 47K 5%	1/10W
R931	1-216-121-00	METAL GLAZE 1M 5%	1/10W

VARIABLE RESISTOR

RV901	1-230-203-00	RES, ADJ, METAL GLAZE 2.2M
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TRANSFORMER

T901	Δ.1-439-428-11	TRANSFORMER ASSY, FLYBACK
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THERMISTOR

TH901	1-807-938-11	THERMISTOR
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*A-7070-645-A TL-18 BOARD, COMPLETE

DIODE

D950	8-719-941-34	LED GL1HD51
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RESISTOR

R950	1-216-037-00	METAL GLAZE 330 5%	1/10W
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*A-7070-646-A TL-19 BOARD, COMPLETE

DIODE

D955	8-719-941-34	LED GL1HD51
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*A-7061-190-A VC BOARD, COMPLETE BLOCK

*A-7061-161-A VC-38 BOARD, COMPLETE

3-724-530-01	HOLDER, WB SENSOR
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CAPACITOR

C600	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C601	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C602	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C603	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C604	1-135-123-91	TANTAL. CHIP 3.3MF	20%	25V

Note:

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VC-38

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C605	1-126-196-11	ELECT 3.3MF	20% 50V	<u>RESISTOR</u>			
C606	1-124-248-00	ELECT 22MF	20% 35V	R600	1-216-045-00	METAL GLAZE 680 5%	1/10W
C607	1-163-036-00	CERAMIC CHIP 0.068MF	50V	R601	1-216-025-00	METAL GLAZE 100 5%	1/10W
C608	1-163-036-00	CERAMIC CHIP 0.068MF	50V	R602	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W
C609	1-164-005-11	CERAMIC CHIP 0.47MF	25V	R603	1-216-091-00	METAL GLAZE 56K 5%	1/10W
C610	1-126-205-11	ELECT 47MF	20% 6.3V	R604	1-216-083-00	METAL GLAZE 27K 5%	1/10W
C611	1-162-638-11	CERAMIC CHIP 1MF	16V	R605	1-216-107-00	METAL GLAZE 270K 5%	1/10W
C612	1-163-016-00	CERAMIC CHIP 0.0039MF	5% 50V	R606	1-216-748-11	METAL GLAZE 39K 5%	1/10W
C850	1-130-467-00	MYLAR 470PF	5% 50V	R607	1-216-077-00	METAL GLAZE 15K 5%	1/10W
C851	1-130-481-00	MYLAR 0.0068MF	5% 50V	R608	1-216-077-00	METAL GLAZE 15K 5%	1/10W
C852	1-135-096-21	TANTAL. CHIP 4.7MF	20% 10V	R609	1-216-121-00	METAL GLAZE 1M 5%	1/10W
C853	1-163-038-00	CERAMIC CHIP 0.1MF	25V	R610	1-216-025-00	METAL GLAZE 100 5%	1/10W
C854	1-124-779-00	ELECT 10MF	20% 16V	R611	1-216-042-00	METAL GLAZE 510 5%	1/10W
C855	1-162-638-11	CERAMIC CHIP 1MF	16V	R613	1-216-081-00	METAL GLAZE 22K 5%	1/10W
C856	1-163-038-00	CERAMIC CHIP 0.1MF	25V	R614	1-216-295-00	METAL GLAZE 0 5%	1/10W
C857	1-163-038-00	CERAMIC CHIP 0.1MF	25V	R850	1-216-049-00	METAL GLAZE 1K 5%	1/10W
C858	1-124-779-00	ELECT 10MF	20% 16V	R851	1-216-073-00	METAL GLAZE 10K 5%	1/10W
<u>CONNECTOR</u>				R852	1-216-085-00	METAL GLAZE 33K 5%	1/10W
CN600	*1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P		R853	1-216-073-00	METAL GLAZE 10K 5%	1/10W
CN601	*1-565-542-21	PIN, CONNECTOR (PC BOARD) 3P		R855	1-216-077-00	METAL GLAZE 15K 5%	1/10W
CN850	*1-566-183-11	PIN, CONNECTOR (PC BOARD) 4P		R856	1-216-079-00	METAL GLAZE 18K 5%	1/10W
CN851	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P		R857	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
<u>DIODE</u>				R858	1-216-073-00	METAL GLAZE 10K 5%	1/10W
D600	8-719-404-32	DIODE MA141WA		R860	1-216-073-00	METAL GLAZE 10K 5%	1/10W
D601	8-719-404-46	DIODE MA110		R861	1-216-097-00	METAL GLAZE 100K 5%	1/10W
D850	8-719-400-20	DIODE MA151WA		R862	1-216-073-00	METAL GLAZE 10K 5%	1/10W
<u>IC</u>				R863	1-216-121-00	METAL GLAZE 1M 5%	1/10W
IC600	A-7090-878-A	IC ICX026AK (CCD IMAGER)		R864	1-216-107-00	METAL GLAZE 270K 5%	1/10W
IC850	8-759-030-27	IC MC34182MR		R865	1-216-099-00	METAL GLAZE 120K 5%	1/10W
IC851	8-759-106-23	IC UPD4066BG		R866	1-216-093-00	METAL GLAZE 68K 5%	1/10W
IC852	8-759-012-75	IC MC146805F2FPSC82533F		R867	1-216-085-00	METAL GLAZE 33K 5%	1/10W
IC853	8-759-100-93	IC UPC393G2		R868	1-216-085-00	METAL GLAZE 33K 5%	1/10W
<u>COIL</u>				R869	1-216-115-00	METAL GLAZE 560K 5%	1/10W
L600	1-412-032-21	INDUCTOR CHIP 100UH		R870	1-216-107-00	METAL GLAZE 270K 5%	1/10W
L850	1-412-031-11	INDUCTOR CHIP 47UH		R871	1-216-101-00	METAL GLAZE 150K 5%	1/10W
<u>TRANSISTOR</u>				R872	1-216-093-00	METAL GLAZE 68K 5%	1/10W
Q600	8-729-105-53	TRANSISTOR 2SK300		R873	1-216-093-00	METAL GLAZE 68K 5%	1/10W
Q601	8-729-402-13	TRANSISTOR XN1501		R882	1-216-067-00	METAL GLAZE 5.6K 5%	1/10W
Q602	8-729-905-35	TRANSISTOR 2SC4081R		R883	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q850	8-729-403-06	TRANSISTOR XN1113		R884	1-216-093-00	METAL GLAZE 68K 5%	1/10W
Q851	8-729-403-06	TRANSISTOR XN1113		R885	1-216-085-00	METAL GLAZE 33K 5%	1/10W
Q852	8-729-805-69	TRANSISTOR 2SA1341		<u>VARIABLE RESISTOR</u>			
Q855	8-729-403-07	TRANSISTOR XN1213		RV600	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
Q856	8-729-403-07	TRANSISTOR XN1213		RV850	1-230-870-11	RES, ADJ, METAL GLAZE 10K	
Q868	8-729-805-45	TRANSISTOR 2SC3395		<u>BALANCE SENSOR</u>			
Q869	8-729-403-07	TRANSISTOR XN1213		SB850	1-807-684-11	SENSOR, WHITE BALANCE	
<u>CRYSTAL</u>				<u>CRYSTAL</u>			
X850	1-567-152-00	OSCILLATOR, CERAMIC (4MHz)					

When indicating parts by reference number, please include the board name.

When indicating parts by reference number, please include the board name.

VC-39**VC-40**

Ref.No	Part No.	Description	Remark
R626	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R627	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R629	1-216-295-00	METAL GLAZE 0 5%	1/10W
R630	1-216-295-00	METAL GLAZE 0 5%	1/10W
R633	1-216-044-00	METAL GLAZE 620 5%	1/10W
R634	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R635	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R636	1-216-055-00	METAL GLAZE 1.8K 5%	1/10W
R637	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R638	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R640	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R641	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R642	1-216-079-00	METAL GLAZE 18K 5%	1/10W
R643	1-216-084-00	METAL GLAZE 30K 5%	1/10W
R644	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R645	1-216-047-00	METAL GLAZE 820 5%	1/10W
R647	1-216-077-00	METAL GLAZE 15K 5%	1/10W
R648	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R649	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R650	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R651	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W
R652	1-216-103-00	METAL GLAZE 180K 5%	1/10W
R653	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R654	1-216-103-00	METAL GLAZE 180K 5%	1/10W
R655	1-216-025-00	METAL GLAZE 100 5%	1/10W
R656	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R657	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R658	1-216-295-00	METAL GLAZE 0 5%	1/10W
R660	1-216-085-00	METAL GLAZE 33K 5%	1/10W
R661	1-216-077-00	METAL GLAZE 15K 5%	1/10W
R662	1-216-295-00	METAL GLAZE 0 5%	1/10W
R663	1-216-295-00	METAL GLAZE 0 5%	1/10W
R666	1-216-295-00	METAL GLAZE 0 5%	1/10W
R667	1-216-005-00	METAL GLAZE 15 5%	1/10W
R668	1-216-005-00	METAL GLAZE 15 5%	1/10W
R669	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R670	1-216-085-00	METAL GLAZE 33K 5%	1/10W
R671	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R672	1-216-295-00	METAL GLAZE 0 5%	1/10W
R674	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R675	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R678	1-216-025-00	METAL GLAZE 100 5%	1/10W
R679	1-216-047-00	METAL GLAZE 820 5%	1/10W
R680	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R681	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R682	1-216-295-00	METAL GLAZE 0 5%	1/10W
R694	1-216-295-00	METAL GLAZE 0 5%	1/10W
R695	1-216-295-00	METAL GLAZE 0 5%	1/10W
R696	1-216-295-00	METAL GLAZE 0 5%	1/10W
R697	1-216-089-00	METAL GLAZE 47K 5%	1/10W

VARIABLE RESISTOR

RV620 1-230-873-11 RES, ADJ, METAL GLAZE 47K

Ref.No	Part No.	Description	Remark
RV621	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	
RV622	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	
RV623	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
<u>FLAT CABLE</u>			
W620	1-574-095-11	CABLE, FLAT (1.0MM PITCH) 15P	
W621	1-559-927-11	CABLE, FLAT (1.0MM PITCH) 33P	
<u>CRYSTAL</u>			
X620	1-567-898-11	OSCILLATOR, CRYSTAL (28.6363MHz)	

*A-7061-163-A	VC-40	BOARD, COMPLETE	*****
A-7068-128-A	MX-7	BOARD, COMPLETE	*****
A-7068-129-A	PR-20	BOARD, COMPLETE	*****
<u>CAPACITOR</u>			
C701	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C702	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C703	1-124-778-00	ELECT 22MF	20% 6.3V
C704	1-124-778-00	ELECT 22MF	20% 6.3V
C705	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C706	1-126-206-11	ELECT 100MF	20% 6.3V
C707	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C710	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C711	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C713	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C714	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C715	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C716	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C717	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C718	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C719	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C720	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C721	1-163-093-00	CERAMIC CHIP 10PF	5% 50V
C722	1-164-005-11	CERAMIC CHIP 0.47MF	25V
C723	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C724	1-164-005-11	CERAMIC CHIP 0.47MF	25V
C725	1-163-093-00	CERAMIC CHIP 10PF	5% 50V
C727	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V
C728	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C729	1-126-198-11	ELECT 4.7MF	20% 35V
C730	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C731	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C732	1-124-566-11	ELECT 120MF	20% 6.3V
C733	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C734	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C736	1-163-038-00	CERAMIC CHIP 0.1MF	25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C737	1-163-115-00	CERAMIC CHIP 82PF	5%	50V	Q706	8-729-905-35	TRANSISTOR 2SC4081R
C738	1-163-125-00	CERAMIC CHIP 220PF	5%	50V	Q707	8-729-905-23	TRANSISTOR 2SA1576R
C739	1-163-095-00	CERAMIC CHIP 12PF	5%	50V	Q708	8-729-905-35	TRANSISTOR 2SC4081R
C740	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V	Q709	8-729-402-84	TRANSISTOR XN6401
C741	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V	Q710	8-729-905-23	TRANSISTOR 2SA1576R
C742	1-124-778-00	ELECT 22MF	20%	6.3V	Q711	8-729-905-35	TRANSISTOR 2SC4081R
C743	1-124-778-00	ELECT 22MF	20%	6.3V			
C744	1-163-109-00	CERAMIC CHIP 47PF	5%	50V		RESISTOR	
C745	1-163-109-00	CERAMIC CHIP 47PF	5%	50V	R701	1-216-049-00	METAL GLAZE 1K 5% 1/10W
C746	1-163-097-00	CERAMIC CHIP 15PF	5%	50V	R702	1-216-049-00	METAL GLAZE 1K 5% 1/10W
C747	1-163-095-00	CERAMIC CHIP 12PF	5%	50V	R703	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W
C748	1-135-091-00	TANTAL. CHIP 1MF	20%	16V	R704	1-216-049-00	METAL GLAZE 1K 5% 1/10W
C749	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R705	1-216-049-00	METAL GLAZE 1K 5% 1/10W
C750	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R706	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W
C752	1-163-133-00	CERAMIC CHIP 470PF	5%	50V	R707	1-216-748-11	METAL GLAZE 39K 5% 1/10W
C753	1-163-133-00	CERAMIC CHIP 470PF	5%	50V	R708	1-216-085-00	METAL GLAZE 33K 5% 1/10W
C754	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V	R709	1-216-085-00	METAL GLAZE 33K 5% 1/10W
C755	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V	R710	1-216-748-11	METAL GLAZE 39K 5% 1/10W
C756	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V	R711	1-216-075-00	METAL GLAZE 12K 5% 1/10W
C757	1-163-103-00	CERAMIC CHIP 27PF	5%	50V	R712	1-216-079-00	METAL GLAZE 18K 5% 1/10W
		CONNECTOR			R713	1-216-748-11	METAL GLAZE 39K 5% 1/10W
CN701	*1-566-183-11	PIN, CONNECTOR (PC BOARD) 4P			R714	1-216-748-11	METAL GLAZE 39K 5% 1/10W
CN702	*1-566-183-21	PIN, CONNECTOR (PC BOARD) 4P			R715	1-216-079-00	METAL GLAZE 18K 5% 1/10W
CN703	*1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P			R716	1-216-079-00	METAL GLAZE 18K 5% 1/10W
CN704	*1-565-532-11	PIN, CONNECTOR (PC BOARD) 7P			R717	1-216-049-00	METAL GLAZE 1K 5% 1/10W
CN705	*1-566-187-11	PIN, CONNECTOR (PC BOARD) 8P			R718	1-216-049-00	METAL GLAZE 1K 5% 1/10W
		DIODE			R725	1-216-081-00	METAL GLAZE 22K 5% 1/10W
D701	8-719-404-46	DIODE MA110			R726	1-216-295-00	METAL GLAZE 0 5% 1/10W
		FILTER			R727	1-216-748-11	METAL GLAZE 39K 5% 1/10W
FL701	1-236-189-11	FILTER, LOW PASS			R728	1-216-093-00	METAL GLAZE 68K 5% 1/10W
FL702	1-236-187-11	FILTER, LOW PASS			R729	1-216-073-00	METAL GLAZE 10K 5% 1/10W
FL703	1-236-190-11	FILTER, LOW PASS			R730	1-216-748-11	METAL GLAZE 39K 5% 1/10W
FL704	1-236-192-11	FILTER, LOW PASS			R732	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W
FL705	1-236-196-11	LPF			R733	1-216-073-00	METAL GLAZE 10K 5% 1/10W
FL706	1-415-554-21	DELAY LINE, LC			R734	1-216-073-00	METAL GLAZE 10K 5% 1/10W
FL707	1-236-191-11	FILTER, BAND PASS			R736	1-216-748-11	METAL GLAZE 39K 5% 1/10W
		IC			R737	1-216-049-00	METAL GLAZE 1K 5% 1/10W
IC701	8-752-033-34	IC CXA1072R			R738	1-216-049-00	METAL GLAZE 1K 5% 1/10W
		COIL			R739	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W
L701	1-412-031-11	INDUCTOR CHIP 47UH			R740	1-216-077-00	METAL GLAZE 15K 5% 1/10W
L702	1-412-031-11	INDUCTOR CHIP 47UH			R741	1-216-080-00	METAL GLAZE 20K 5% 1/10W
L703	1-410-204-31	INDUCTOR CHIP 10UH			R742	1-216-748-11	METAL GLAZE 39K 5% 1/10W
L704	1-410-657-21	INDUCTOR CHIP 180UH			R743	1-216-081-00	METAL GLAZE 22K 5% 1/10W
		TRANSISTOR			R745	1-216-295-00	METAL GLAZE 0 5% 1/10W
Q701	8-729-905-23	TRANSISTOR 2SA1576R			R746	1-216-295-00	METAL GLAZE 0 5% 1/10W
Q702	8-729-905-35	TRANSISTOR 2SC4081R			R747	1-216-075-00	METAL GLAZE 12K 5% 1/10W
Q705	8-729-905-23	TRANSISTOR 2SA1576R			R748	1-216-049-00	METAL GLAZE 1K 5% 1/10W
					R749	1-216-077-00	METAL GLAZE 15K 5% 1/10W
					R750	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W
					R751	1-216-748-11	METAL GLAZE 39K 5% 1/10W
					R752	1-216-085-00	METAL GLAZE 33K 5% 1/10W
					R753	1-216-748-11	METAL GLAZE 39K 5% 1/10W
					R754	1-216-082-00	METAL GLAZE 24K 5% 1/10W

When indicating parts by reference number, please include the board name.

VC-40**VA-40**

Ref.No	Part No.	Description	Remark
R755	1-216-075-00	METAL GLAZE 12K 5%	1/10W
R756	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W
R757	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R758	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R759	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R760	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R761	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R762	1-216-295-00	METAL GLAZE 0 5%	1/10W
R764	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R765	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R766	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R767	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R768	1-216-079-00	METAL GLAZE 18K 5%	1/10W
R769	1-216-075-00	METAL GLAZE 12K 5%	1/10W
R770	1-216-075-00	METAL GLAZE 12K 5%	1/10W
R771	1-216-077-00	METAL GLAZE 15K 5%	1/10W
R772	1-216-295-00	METAL GLAZE 0 5%	1/10W
R773	1-216-295-00	METAL GLAZE 0 5%	1/10W
R774	1-216-295-00	METAL GLAZE 0 5%	1/10W
R776	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R777	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R778	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R779	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R780	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R781	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R782	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R783	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R784	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R786	1-216-295-00	METAL GLAZE 0 5%	1/10W
R787	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R788	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R789	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R790	1-216-072-00	METAL GLAZE 9.1K 5%	1/10W
R791	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R792	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R793	1-216-080-00	METAL GLAZE 20K 5%	1/10W
R794	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R795	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R796	1-216-041-00	METAL GLAZE 470 5%	1/10W
R797	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
R798	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R799	1-216-295-00	METAL GLAZE 0 5%	1/10W
R801	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R802	1-216-067-00	METAL GLAZE 5.6K 5%	1/10W
R805	1-216-089-00	METAL GLAZE 47K 5%	1/10W
R806	1-216-075-00	METAL GLAZE 12K 5%	1/10W
R809	1-216-298-00	METAL GLAZE 2.2 5%	1/10W
R810	1-216-077-00	METAL GLAZE 15K 5%	1/10W
R811	1-216-295-00	METAL GLAZE 0 5%	1/10W
R812	1-216-079-00	METAL GLAZE 18K 5%	1/10W
R813	1-216-295-00	METAL GLAZE 0 5%	1/10W
R814	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R815	1-216-295-00	METAL GLAZE 0 5%	1/10W

Ref.No	Part No.	Description	Remark
R816	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R819	1-216-079-00	METAL GLAZE 18K 5%	1/10W
VARIABLE RESISTOR			
RV701	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV702	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV703	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV704	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV705	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV706	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV707	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV708	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV709	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV710	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV711	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV712	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV713	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV714	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV715	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV716	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV717	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV718	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV719	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV720	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV722	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV724	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	

*A-7061-165-A VA-40 BOARD, COMPLETE			

CAPACITOR			
C251	1-124-779-00	ELECT 10MF 20%	16V
C252	1-124-779-00	ELECT 10MF 20%	16V
C253	1-163-021-00	CERAMIC CHIP 0.01MF 10%	50V
C254	1-163-105-00	CERAMIC CHIP 33PF 5%	50V
C255	1-163-105-00	CERAMIC CHIP 33PF 5%	50V
C256	1-124-779-00	ELECT 10MF 20%	16V
C257	1-163-021-00	CERAMIC CHIP 0.01MF 10%	50V
C258	1-124-779-00	ELECT 10MF 20%	16V
C259	1-162-638-11	CERAMIC CHIP 1MF 16V	
C260	1-163-141-00	CERAMIC CHIP 0.001MF 5%	50V
C261	1-163-141-00	CERAMIC CHIP 0.001MF 5%	50V
C262	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C263	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C264	1-163-809-11	CERAMIC CHIP 0.047MF 10%	25V
C266	1-163-809-11	CERAMIC CHIP 0.047MF 10%	25V
C267	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C268	1-163-125-00	CERAMIC CHIP 220PF 5%	50V
C269	1-163-017-00	CERAMIC CHIP 0.0047MF 10%	50V
C270	1-163-019-00	CERAMIC CHIP 0.0068MF 10%	50V
C271	1-163-129-00	CERAMIC CHIP 330PF 5%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark	Ref.No	Part No.	Description		Remark
C272	1-162-638-11	CERAMIC CHIP 1MF		16V	C406	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C273	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V	C407	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C274	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V	C408	1-126-205-11	ELECT 47MF	20%	6.3V
C275	1-163-111-00	CERAMIC CHIP 56PF	5%	50V	C409	1-126-191-11	ELECT 0.47MF	20%	50V
C276	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V	C410	1-126-205-11	ELECT 47MF	20%	6.3V
C277	1-163-101-00	CERAMIC CHIP 22PF	5%	50V	C411	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C278	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V	C412	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C360	1-124-779-00	ELECT 10MF	20%	16V	C413	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C361	1-126-196-11	ELECT 3.3MF	20%	50V	C414	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C362	1-163-021-00	CERAMIC CHIP 0.01MF		50V	C415	1-126-208-11	ELECT 47MF	20%	4V
C363	1-135-091-00	TANTAL. CHIP 1MF	10%	16V	C416	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C364	1-163-021-00	CERAMIC CHIP 0.01MF		50V	C417	1-124-779-00	ELECT 10MF	20%	16V
C365	1-126-196-11	ELECT 3.3MF	20%	50V	C418	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C366	1-163-038-00	CERAMIC CHIP 0.1MF		25V	C419	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C367	1-126-198-11	ELECT 4.7MF	20%	35V	C420	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C368	1-126-195-11	ELECT 2.2MF	20%	50V	C421	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C369	1-124-779-00	ELECT 10MF	20%	16V	C422	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C370	1-126-193-11	ELECT 1MF	20%	50V	C423	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C371	1-124-779-00	ELECT 10MF	20%	16V	C424	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C372	1-135-091-00	TANTAL. CHIP 1MF	10%	16V	C425	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C373	1-135-091-00	TANTAL. CHIP 1MF	10%	16V	C426	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C374	1-124-778-00	ELECT 22MF	20%	6.3V	C428	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C375	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V	C429	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C376	1-126-193-11	ELECT 1MF	20%	50V	C430	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C377	1-126-193-11	ELECT 1MF	20%	50V	C431	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C378	1-126-193-11	ELECT 1MF	20%	50V	C432	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C379	1-126-193-11	ELECT 1MF	20%	50V	C433	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C380	1-126-193-11	ELECT 1MF	20%	50V	C434	1-124-778-00	ELECT 22MF	20%	6.3V
C381	1-163-038-00	CERAMIC CHIP 0.1MF		25V	C435	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C382	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V	C436	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C383	1-124-779-00	ELECT 10MF	20%	16V	C437	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C384	1-124-779-00	ELECT 10MF	20%	16V	C438	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C385	1-126-198-11	ELECT 4.7MF	20%	35V	C439	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C386	1-126-198-11	ELECT 4.7MF	20%	35V	C440	1-163-114-00	CERAMIC CHIP 75PF	5%	50V
C387	1-163-021-00	CERAMIC CHIP 0.01MF		50V	C441	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C388	1-163-021-00	CERAMIC CHIP 0.01MF		50V	C442	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C389	1-124-778-00	ELECT 22MF	20%	6.3V	C443	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C390	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V	C444	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C391	1-126-191-11	ELECT 0.47MF	20%	50V	C445	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C392	1-124-779-00	ELECT 10MF	20%	16V	C446	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C393	1-126-246-11	ELECT 220MF	20%	4V	C447	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C394	1-163-021-00	CERAMIC CHIP 0.01MF		50V	C448	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C395	1-124-779-00	ELECT 10MF	20%	16V	C449	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C396	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V	C450	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C397	1-126-192-11	ELECT 0.68MF	20%	50V	C451	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C398	1-163-105-00	CERAMIC CHIP 33PF	5%	50V	C452	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C399	1-163-101-00	CERAMIC CHIP 22PF	5%	50V	C453	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C400	1-124-779-00	ELECT 10MF	20%	16V	C454	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C401	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V	C455	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C402	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V	C456	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C403	1-124-779-00	ELECT 10MF	20%	16V	C457	1-163-091-00	CERAMIC CHIP 8PF	0.25PF	50V
C404	1-126-191-11	ELECT 0.47MF	20%	50V	C458	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C405	1-124-779-00	ELECT 10MF	20%	16V	C459	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C460	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C558	1-126-207-11	ELECT 33MF	20% 4V
C461	1-163-123-00	CERAMIC CHIP 180PF	5% 50V	C559	1-135-091-00	TANTAL. CHIP 1MF	10% 16V
C462	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C560	1-126-209-11	ELECT 100MF	20% 4V
C463	1-124-778-00	ELECT 22MF	20% 6.3V	C561	1-126-198-11	ELECT 4.7MF	20% 35V
C464	1-124-778-00	ELECT 22MF	20% 6.3V	C562	1-163-036-00	CERAMIC CHIP 0.068MF	50V
C466	1-163-119-00	CERAMIC CHIP 120PF	5% 50V	C563	1-126-206-11	ELECT 100MF	20% 6.3V
C467	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C564	1-126-206-11	ELECT 100MF	20% 6.3V
C468	1-124-779-00	ELECT 10MF	20% 16V	C565	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C469	1-163-131-00	CERAMIC CHIP 390PF	5% 50V	C566	1-124-779-00	ELECT 10MF	20% 16V
C470	1-163-133-00	CERAMIC CHIP 470PF	5% 50V	C567	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C471	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V	C568	1-124-779-00	ELECT 10MF	20% 16V
C472	1-124-779-00	ELECT 10MF	20% 16V	C569	1-126-206-11	ELECT 100MF	20% 6.3V
C473	1-163-077-00	CERAMIC CHIP 0.1MF	50V	C570	1-163-145-00	CERAMIC CHIP 0.0015MF	5% 50V
C474	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C571	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C475	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C572	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V
C476	1-124-779-00	ELECT 10MF	20% 16V	C573	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C477	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C575	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V
C478	1-124-779-00	ELECT 10MF	20% 16V	C576	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V
C479	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V	C577	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V
C480	1-124-779-00	ELECT 10MF	20% 16V	<u>CONNECTOR</u>			
C481	1-124-779-00	ELECT 10MF	20% 16V	CN360	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
C482	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	CN361	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
C483	1-124-779-00	ELECT 10MF	20% 16V	<u>TRIMMER</u>			
C484	1-163-113-00	CERAMIC CHIP 68PF	5% 50V	CV360	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30PF	
C485	1-163-129-00	CERAMIC CHIP 330PF	5% 50V	<u>DIODE</u>			
C486	1-124-778-00	ELECT 22MF	20% 6.3V	D360	8-719-106-43	ZENER DIODE RD9.1M-B1	
C488	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	D361	8-719-106-43	ZENER DIODE RD9.1M-B1	
C489	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D362	8-719-106-43	ZENER DIODE RD9.1M-B1	
C490	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	D363	8-719-106-43	ZENER DIODE RD9.1M-B1	
C491	1-126-191-11	ELECT 0.47MF	20% 50V	D364	8-719-106-43	ZENER DIODE RD9.1M-B1	
C492	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V	D365	8-719-106-43	ZENER DIODE RD9.1M-B1	
C493	1-163-021-00	CERAMIC CHIP 0.01MF	50V	D366	8-719-106-43	ZENER DIODE RD9.1M-B1	
C494	1-124-279-11	ELECT 3.3MF	20% 25V	D367	8-719-106-43	ZENER DIODE RD9.1M-B1	
C495	1-163-021-00	CERAMIC CHIP 0.01MF	50V	D369	8-719-104-23	DIODE 1S5123	
C496	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	D370	8-719-100-05	DIODE 1S2837	
C497	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	D371	8-719-100-05	DIODE 1S2837	
C501	1-163-105-00	CERAMIC CHIP 33PF	5% 50V	D373	8-719-106-43	ZENER DIODE RD9.1M-B1	
C502	1-163-111-00	CERAMIC CHIP 56PF	5% 50V	<u>FILTER</u>			
C503	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	FL360	1-236-146-11	FILTER, BAND PASS	
C505	1-124-779-00	ELECT 10MF	20% 16V	FL361	1-409-439-11	FILTER, TRAP	
C507	1-163-093-00	CERAMIC CHIP 10PF	5% 50V	FL362	1-567-306-11	FILTER, CERAMIC	
C508	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	FL550	1-236-145-11	FILTER, BAND PASS	
C511	1-135-072-21	TANTAL. CHIP 0.22MF	20% 35V	<u>IC</u>			
C512	1-163-034-00	CERAMIC CHIP 0.033MF	50V	IC250	8-759-209-53	IC CXA1204Q	
C513	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	IC360	8-752-031-46	IC CXA1200Q	
C514	1-163-059-00	CERAMIC CHIP 0.01MF	10% 50V	IC361	8-752-323-46	IC CXL1501M	
C550	1-163-019-00	CERAMIC CHIP 0.0068MF	10% 50V	IC362	8-752-033-40	IC CXA1201Q	
C551	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	IC364	8-759-710-09	IC NJM2233AM	
C552	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V				
C554	1-126-209-11	ELECT 100MF	20% 4V				
C555	1-135-091-00	TANTAL. CHIP 1MF	10% 16V				
C556	1-135-091-00	TANTAL. CHIP 1MF	10% 16V				
C557	1-135-105-00	TANTAL. CHIP 33MF	20% 4V				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
IC365	8-759-710-09	IC NJM2233AM	
IC366	8-759-100-93	IC UPC393G2	
IC367	8-759-112-72	IC UPD6142G-101	
IC368	8-759-200-81	IC TC4053BF	
IC369	8-759-200-81	IC TC4053BF	
IC550	8-741-150-50	IC SBX1505-01	
<u>COIL</u>			
L250	1-408-789-21	INDUCTOR CHIP 100UH	
L251	1-408-795-21	INDUCTOR CHIP 330UH	
L252	1-410-393-11	INDUCTOR CHIP 100UH	
L360	1-412-031-11	INDUCTOR CHIP 47UH	
L361	1-412-031-11	INDUCTOR CHIP 47UH	
L362	1-410-393-11	INDUCTOR CHIP 100UH	
L363	1-412-031-11	INDUCTOR CHIP 47UH	
L364	1-410-392-11	INDUCTOR CHIP 82UH	
L365	1-410-393-11	INDUCTOR CHIP 100UH	
L366	1-410-393-11	INDUCTOR CHIP 100UH	
L367	1-410-389-11	INDUCTOR CHIP 47UH	
L368	1-410-381-11	INDUCTOR CHIP 10UH	
L369	1-410-657-21	INDUCTOR CHIP 180UH	
L371	1-408-795-21	INDUCTOR CHIP 330UH	
L372	1-408-795-21	INDUCTOR CHIP 330UH	
L373	1-408-797-11	INDUCTOR CHIP 470UH	
L374	1-410-377-11	INDUCTOR CHIP 4.7UH	
L375	1-410-393-11	INDUCTOR CHIP 100UH	
L376	1-408-795-21	INDUCTOR CHIP 330UH	
L377	1-410-655-11	INDUCTOR CHIP 120UH	
L378	1-410-393-11	INDUCTOR CHIP 100UH	
L379	1-410-656-11	INDUCTOR CHIP 150UH	
L380	1-410-388-21	INDUCTOR CHIP 39UH	
L381	1-410-377-11	INDUCTOR CHIP 4.7UH	
L382	1-410-388-21	INDUCTOR CHIP 39UH	
L383	1-410-380-21	INDUCTOR CHIP 8.2UH	
L384	1-410-388-21	INDUCTOR CHIP 39UH	
L385	1-410-392-11	INDUCTOR CHIP 82UH	
L386	1-410-393-11	INDUCTOR CHIP 100UH	
L387	1-410-388-21	INDUCTOR CHIP 39UH	
L388	1-410-390-11	INDUCTOR CHIP 56UH	
L389	1-410-392-11	INDUCTOR CHIP 82UH	
L390	1-410-392-11	INDUCTOR CHIP 82UH	
L550	1-410-389-11	INDUCTOR CHIP 47UH	
<u>TRANSISTOR</u>			
Q250	8-729-905-23	TRANSISTOR 2SA1576R	
Q251	8-729-905-35	TRANSISTOR 2SC4081R	
Q252	8-729-905-23	TRANSISTOR 2SA1576R	
Q253	8-729-109-42	TRANSISTOR 2SK94X2	
Q254	8-729-905-18	TRANSISTOR DTC144EU	
Q360	8-729-101-07	TRANSISTOR 2SB798	
Q361	8-729-905-35	TRANSISTOR 2SC4081R	
Q362	8-729-905-12	TRANSISTOR DTA144EU	
Q363	8-729-905-35	TRANSISTOR 2SC4081R	

Ref.No	Part No.	Description	Remark
Q364	8-729-905-35	TRANSISTOR 2SC4081R	
Q365	8-729-905-35	TRANSISTOR 2SC4081R	
Q366	8-729-905-35	TRANSISTOR 2SC4081R	
Q367	8-729-905-35	TRANSISTOR 2SC4081R	
Q368	8-729-905-23	TRANSISTOR 2SA1576R	
Q369	8-729-905-35	TRANSISTOR 2SC4081R	
Q370	8-729-101-07	TRANSISTOR 2SB798	
Q371	8-729-905-35	TRANSISTOR 2SC4081R	
Q372	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q373	8-729-905-23	TRANSISTOR 2SA1576R	
Q374	8-729-905-23	TRANSISTOR 2SA1576R	
Q375	8-729-905-35	TRANSISTOR 2SC4081R	
Q376	8-729-905-23	TRANSISTOR 2SA1576R	
Q377	8-729-905-18	TRANSISTOR DTC144EU	
Q378	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q379	8-729-905-35	TRANSISTOR 2SC4081R	
Q380	8-729-905-12	TRANSISTOR DTA144EU	
Q381	8-729-905-12	TRANSISTOR DTA144EU	
Q382	8-729-905-35	TRANSISTOR 2SC4081R	
Q383	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q384	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q385	8-729-122-63	TRANSISTOR 2SA1226	
Q386	8-729-903-10	TRANSISTOR FMW1	
Q387	8-729-905-23	TRANSISTOR 2SA1576R	
Q388	8-729-905-23	TRANSISTOR 2SA1576R	
Q389	8-729-905-35	TRANSISTOR 2SC4081R	
Q390	8-729-905-35	TRANSISTOR 2SC4081R	
Q391	8-729-905-18	TRANSISTOR DTC144EU	
Q392	8-729-905-18	TRANSISTOR DTC144EU	
Q393	8-729-905-35	TRANSISTOR 2SC4081R	
Q394	8-729-905-35	TRANSISTOR 2SC4081R	
Q395	8-729-905-35	TRANSISTOR 2SC4081R	
Q396	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q397	8-729-905-23	TRANSISTOR 2SA1576R	
Q398	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q399	8-729-905-23	TRANSISTOR 2SA1576R	
Q400	8-729-905-18	TRANSISTOR DTC144EU	
Q401	8-729-905-23	TRANSISTOR 2SA1576R	
Q402	8-729-905-35	TRANSISTOR 2SC4081R	
Q403	8-729-905-18	TRANSISTOR DTC144EU	
Q404	8-729-905-18	TRANSISTOR DTC144EU	
Q405	8-729-905-35	TRANSISTOR 2SC4081R	
Q406	8-729-103-02	TRANSISTOR 2SA1226	
Q407	8-729-905-35	TRANSISTOR 2SC4081R	
Q408	8-729-905-12	TRANSISTOR DTA144EU	
Q409	8-729-905-18	TRANSISTOR DTC144EU	
Q410	8-729-905-35	TRANSISTOR 2SC4081R	
Q411	8-729-905-35	TRANSISTOR 2SC4081R	
Q412	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q413	8-729-905-23	TRANSISTOR 2SA1576R	
Q414	8-729-905-18	TRANSISTOR DTC144EU	
Q415	8-729-905-18	TRANSISTOR DTC144EU	
Q416	8-729-905-12	TRANSISTOR DTA144EU	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
Q550	8-729-905-35	TRANSISTOR 2SC4081R		R375	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q551	8-729-905-12	TRANSISTOR DTA144EU		R376	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
Q552	8-729-905-35	TRANSISTOR 2SC4081R		R377	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q553	8-729-905-35	TRANSISTOR 2SC4081R		R378	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
Q554	8-729-905-23	TRANSISTOR 2SA1576R		R379	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q555	8-729-905-35	TRANSISTOR 2SC4081R		R380	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
RESISTOR				R381	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R251	1-216-081-00	METAL GLAZE 22K 5% 1/10W		R382	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R252	1-216-091-00	METAL GLAZE 56K 5% 1/10W		R383	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R253	1-216-121-00	METAL GLAZE 1M 5% 1/10W		R385	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R254	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W		R387	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R255	1-216-041-00	METAL GLAZE 470 5% 1/10W		R388	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R256	1-216-041-00	METAL GLAZE 470 5% 1/10W		R389	1-216-699-11	METAL CHIP 100K 0.50% 1/10W	
R257	1-216-049-00	METAL GLAZE 1K 5% 1/10W		R390	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R258	1-216-097-00	METAL GLAZE 100K 5% 1/10W		R391	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R259	1-216-117-00	METAL GLAZE 680K 5% 1/10W		R392	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R260	1-216-085-00	METAL GLAZE 33K 5% 1/10W		R394	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R261	1-216-081-00	METAL GLAZE 22K 5% 1/10W		R395	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R262	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		R396	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R263	1-216-027-00	METAL GLAZE 120 5% 1/10W		R397	1-216-304-11	METAL GLAZE 3.3 5% 1/10W	
R264	1-216-031-00	METAL GLAZE 180 5% 1/10W		R398	1-216-015-00	METAL GLAZE 39 5% 1/10W	
R265	1-216-295-00	METAL GLAZE 0 5% 1/10W		R399	1-216-015-00	METAL GLAZE 39 5% 1/10W	
R266	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W		R400	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R267	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W		R401	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R268	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		R402	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R269	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W		R403	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R270	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W		R404	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R271	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		R405	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R272	1-216-081-00	METAL GLAZE 22K 5% 1/10W		R406	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R273	1-216-113-00	METAL GLAZE 470K 5% 1/10W		R407	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R274	1-216-091-00	METAL GLAZE 56K 5% 1/10W		R408	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R275	1-216-295-00	METAL GLAZE 0 5% 1/10W		R409	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R276	1-216-295-00	METAL GLAZE 0 5% 1/10W		R410	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R279	1-247-883-00	CARBON 150K 5% 1/4W		R411	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R290	1-216-073-00	METAL GLAZE 10K 5% 1/10W		R412	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R291	1-216-073-00	METAL GLAZE 10K 5% 1/10W		R413	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R292	1-216-864-11	METAL GLAZE 0 5% 1/16W		R414	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R360	1-216-095-00	METAL GLAZE 82K 5% 1/10W		R415	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R361	1-216-027-00	METAL GLAZE 120 5% 1/10W		R416	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R362	1-216-121-00	METAL GLAZE 1M 5% 1/10W		R417	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R363	1-216-121-00	METAL GLAZE 1M 5% 1/10W		R418	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R364	1-216-121-00	METAL GLAZE 1M 5% 1/10W		R419	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R365	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		R420	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R366	1-216-089-00	METAL GLAZE 47K 5% 1/10W		R421	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R367	1-216-089-00	METAL GLAZE 47K 5% 1/10W		R422	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R368	1-216-081-00	METAL GLAZE 22K 5% 1/10W		R423	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R369	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		R424	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R370	1-216-089-00	METAL GLAZE 47K 5% 1/10W		R425	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R371	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W		R426	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R372	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W		R427	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R373	1-216-089-00	METAL GLAZE 47K 5% 1/10W		R428	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R374	1-216-089-00	METAL GLAZE 47K 5% 1/10W		R431	1-216-037-00	METAL GLAZE 330 5% 1/10W	
				R432	1-216-043-00	METAL GLAZE 560 5% 1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R433	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R491	1-216-047-00	METAL GLAZE	820 5% 1/10W
R434	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R492	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R435	1-216-085-00	METAL GLAZE	33K 5% 1/10W	R493	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R436	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R494	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R437	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R495	1-216-041-00	METAL GLAZE	470 5% 1/10W
R439	1-216-043-00	METAL GLAZE	560 5% 1/10W	R496	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R440	1-216-025-00	METAL GLAZE	100 5% 1/10W	R497	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W
R441	1-216-041-00	METAL GLAZE	470 5% 1/10W	R498	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R442	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R499	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
R444	1-216-077-00	METAL GLAZE	15K 5% 1/10W	R500	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R445	1-216-041-00	METAL GLAZE	470 5% 1/10W	R501	1-216-015-00	METAL GLAZE	39 5% 1/10W
R446	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R502	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W
R447	1-216-063-00	METAL GLAZE	3.9K 5% 1/10W	R503	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R448	1-216-043-00	METAL GLAZE	560 5% 1/10W	R504	1-216-663-11	METAL CHIP	3.3K 0.50% 1/10W
R449	1-216-043-00	METAL GLAZE	560 5% 1/10W	R505	1-216-093-00	METAL GLAZE	68K 5% 1/10W
R450	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R506	1-216-117-00	METAL GLAZE	680K 5% 1/10W
R451	1-216-025-00	METAL GLAZE	100 5% 1/10W	R507	1-216-131-11	METAL GLAZE	2.7M 5% 1/10W
R452	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R508	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W
R453	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R509	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R454	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R510	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R456	1-216-093-00	METAL GLAZE	68K 5% 1/10W	R511	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R457	1-216-045-00	METAL GLAZE	680 5% 1/10W	R512	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R458	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R513	1-216-043-00	METAL GLAZE	560 5% 1/10W
R459	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R514	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R460	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R515	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R461	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R516	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R462	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R517	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W
R463	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	R518	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R464	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R519	1-216-021-00	METAL GLAZE	68 5% 1/10W
R465	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R520	1-216-295-00	METAL GLAZE	0 5% 1/10W
R466	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R521	1-216-295-00	METAL GLAZE	0 5% 1/10W
R467	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R522	1-216-041-00	METAL GLAZE	470 5% 1/10W
R468	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R523	1-216-039-00	METAL GLAZE	390 5% 1/10W
R469	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R525	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R470	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R526	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R471	1-216-009-00	METAL GLAZE	22 5% 1/10W	R527	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R472	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R528	1-216-045-00	METAL GLAZE	680 5% 1/10W
R473	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R529	1-216-047-00	METAL GLAZE	820 5% 1/10W
R474	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R530	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W
R475	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R531	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R476	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W	R533	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R477	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W	R534	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R478	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R535	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R479	1-216-083-00	METAL GLAZE	27K 5% 1/10W	R536	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R480	1-216-021-00	METAL GLAZE	68 5% 1/10W	R540	1-216-047-00	METAL GLAZE	820 5% 1/10W
R481	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W	R541	1-216-295-00	METAL GLAZE	0 5% 1/10W
R482	1-216-047-00	METAL GLAZE	820 5% 1/10W	R542	1-216-295-00	METAL GLAZE	0 5% 1/10W
R483	1-216-121-00	METAL GLAZE	1M 5% 1/10W	R544	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R484	1-216-029-00	METAL GLAZE	150 5% 1/10W	R545	1-216-295-00	METAL GLAZE	0 5% 1/10W
R486	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R546	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R487	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R547	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R488	1-216-047-00	METAL GLAZE	820 5% 1/10W	R548	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R489	1-216-047-00	METAL GLAZE	820 5% 1/10W	R549	1-216-077-00	METAL GLAZE	15K 5% 1/10W

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
R550	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R551	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R553	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R554	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R555	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R556	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R557	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R558	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R559	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R560	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R561	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R562	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R563	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R564	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R565	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R566	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R567	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R568	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R569	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R570	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R571	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R572	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R573	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R574	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R575	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R576	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R577	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R578	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R579	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R580	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R581	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R582	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R583	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R584	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R599	1-216-295-00	METAL GLAZE 0 5% 1/10W	

VARIABLE RESISTOR

RV360	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV361	1-230-868-11	RES, ADJ, METAL GRAZE 2.2K
RV362	1-230-866-11	RES, ADJ, METAL GRAZE 470
RV363	1-230-868-11	RES, ADJ, METAL GRAZE 2.2K
RV364	1-230-869-11	RES, ADJ, METAL GRAZE 4.7K
RV365	1-230-873-11	RES, ADJ, METAL GRAZE 47K
RV366	1-230-870-11	RES, ADJ, METAL GRAZE 10K
RV367	1-230-866-11	RES, ADJ, METAL GRAZE 470
RV368	1-230-866-11	RES, ADJ, METAL GRAZE 470
RV369	1-230-868-11	RES, ADJ, METAL GRAZE 2.2K

TERMINAL PIN

TP361	*1-535-622-11	PIN, TERMINAL
TP362	*1-535-622-11	PIN, TERMINAL

Ref.No	Part No.	Description	Remark
CRYSTAL			
X250	1-567-700-21	VIBRATOR, CRYSTAL (5.9MHz)	
X360	1-577-080-11	VIBRATOR, CRYSTAL (3.58MHz)	

*A-7061-282-A SS-86 BOARD, COMPLETE			

*3-725-136-01 REINFORCEMENT, VA-SS			
CAPACITOR			
C001	1-126-204-11	ELECT 47MF	20% 16V
C002	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C003	1-163-105-00	CERAMIC CHIP 33PF	5% 50V
C004	1-126-198-11	ELECT 4.7MF	20% 35V
C006	1-124-779-00	ELECT 10MF	20% 16V
C007	1-124-779-00	ELECT 10MF	20% 16V
C008	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C009	1-126-206-11	ELECT 100MF	20% 6.3V
C010	1-162-638-11	CERAMIC CHIP 1MF	16V
C011	1-162-638-11	CERAMIC CHIP 1MF	16V
C012	1-124-778-00	ELECT 22MF	20% 6.3V
C014	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C015	1-163-034-00	CERAMIC CHIP 0.033MF	50V
C017	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C051	1-163-077-00	CERAMIC CHIP 0.1MF	10% 25V
C052	1-163-077-00	CERAMIC CHIP 0.1MF	10% 25V
C053	1-163-077-00	CERAMIC CHIP 0.1MF	10% 25V
C054	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C055	1-124-577-11	ELECT 82MF	20% 10V
C056	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C057	1-124-577-11	ELECT 82MF	20% 10V
C058	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C059	1-124-577-11	ELECT 82MF	20% 10V
C060	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C061	1-126-204-11	ELECT 47MF	20% 16V
C062	1-162-638-11	CERAMIC CHIP 1MF	16V
C063	1-135-099-00	TANTAL. CHIP 2.2MF	20% 6.3V
C064	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C065	1-127-506-00	ELECT(SOLID) 1MF	20% 25V
C066	1-162-638-11	CERAMIC CHIP 1MF	16V
C067	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C068	1-126-196-11	ELECT 3.3MF	20% 50V
C069	1-124-779-00	ELECT 10MF	20% 16V
C070	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C071	1-124-779-00	ELECT 10MF	20% 16V
C072	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C073	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C074	1-124-779-00	ELECT 10MF	20% 16V
C075	1-124-779-00	ELECT 10MF	20% 16V
C076	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C080	1-163-117-00	CERAMIC CHIP 100PF	5% 50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C081	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C330	1-124-778-00	ELECT 22MF	20% 6.3V
C082	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C332	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C083	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C333	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C084	1-163-033-00	CERAMIC CHIP 0.022MF	50V	C334	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C085	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C335	1-124-778-00	ELECT 22MF	20% 6.3V
C086	1-136-017-00	CERAMIC CHIP 0.0047MF	50V	C336	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C087	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C337	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C088	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	C338	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C089	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	C339	1-124-778-00	ELECT 22MF	20% 6.3V
C200	1-124-779-00	ELECT 10MF	20% 16V	C340	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
C201	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C341	1-124-779-00	ELECT 10MF	20% 16V
C202	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C342	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C204	1-124-779-00	ELECT 10MF	20% 16V	C343	1-124-778-00	ELECT 22MF	20% 6.3V
C205	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C344	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C206	1-124-779-00	ELECT 10MF	20% 16V	C345	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C207	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C346	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C209	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C347	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C210	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V	C348	1-124-778-00	ELECT 22MF	20% 6.3V
C211	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C349	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
C212	1-124-779-00	ELECT 10MF	20% 16V	C350	1-163-123-00	CERAMIC CHIP 180PF	5% 50V
C213	1-124-778-00	ELECT 22MF	20% 6.3V	C351	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C215	1-135-145-11	TANTAL. CHIP 0.47MF	20% 25V	C353	1-124-778-00	ELECT 22MF	20% 6.3V
C216	1-163-059-00	CERAMIC CHIP 0.01MF	10% 50V	<u>CONNECTOR</u>			
C217	1-163-038-00	CERAMIC CHIP 0.1MF	25V	CN001	*1-564-014-00	PIN, CONNECTOR 4P	
C218	1-163-089-00	CERAMIC CHIP 6PF	0.5PF 50V	CN002	*1-564-014-00	PIN, CONNECTOR 4P	
C301	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	CN003	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
C302	1-163-121-00	CERAMIC CHIP 150PF	5% 50V	CN004	*1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
C303	1-163-115-00	CERAMIC CHIP 82PF	5% 50V	CN005	1-566-725-11	PIN, CONNECTOR 7P	
C304	1-163-038-00	CERAMIC CHIP 0.1MF	25V	CN006	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
C305	1-163-038-00	CERAMIC CHIP 0.1MF	25V	CN007	1-566-536-11	CONNECTOR, FPC (ZIF) 20P	
C306	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	<u>TRIMMER</u>			
C308	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	CT200	1-141-368-11	CAP, CHIP TRIMMER 30PF	
C309	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	CV360	1-141-368-11	CAP, CHIP TRIMMER	
C310	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	<u>DIODE</u>			
C311	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V	D003	8-719-404-12	DIODE MA159	
C312	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	D004	8-719-404-12	DIODE MA159	
C313	1-163-077-00	CERAMIC CHIP 0.1MF	10% 25V	D050	8-719-938-75	DIODE SB05-05CP	
C314	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	D051	8-719-938-75	DIODE SB05-05CP	
C315	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	D200	8-719-100-03	DIODE 1S2835	
C316	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	D201	8-719-404-12	DIODE MA159	
C317	1-124-778-00	ELECT 22MF	20% 6.3V	D203	8-713-300-88	DIODE 1T33C-01	
C318	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	D399	8-719-100-13	DIODE RD2.7EB1	
C319	1-163-137-00	CERAMIC CHIP 680PF	5% 50V	<u>IC</u>			
C320	1-124-778-00	ELECT 22MF	20% 6.3V	IC001	8-759-142-16	IC UPD78112GF-510	
C321	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	IC002	8-759-100-94	IC UPC358G2	
C322	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	IC003	8-759-804-72	IC LB1631M	
C323	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V	IC004	8-759-202-45	IC CX20114	
C324	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	IC005	8-759-940-79	IC S-81350AG	
C325	1-163-013-00	CERAMIC CHIP 0.0022MF	10% 50V				
C326	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V				
C327	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V				
C328	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V				
C329	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V				

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
IC006	8-759-107-68	IC CX20115A		Q080	8-729-805-25	TRANSISTOR 2SB1121-T	
IC007	8-759-805-06	IC CXA1127MTP-1		Q081	8-729-805-25	TRANSISTOR 2SB1121-T	
IC200	8-759-141-56	IC UPD7507HG-532-22		Q201	8-729-905-23	TRANSISTOR 2SA1576R	
IC201	8-752-323-14	IC CXK58256MF-12LL		Q202	8-729-905-35	TRANSISTOR 2SC4081R	
IC202	8-759-972-39	IC MB670493		Q203	8-729-810-19	TRANSISTOR 2SC4396	
IC203	8-759-101-12	IC UPC311G2		Q204	8-729-810-19	TRANSISTOR 2SC4396	
IC301	8-752-033-84	IC CXA1202R		Q205	8-729-810-19	TRANSISTOR 2SC4396	
	COIL			Q206	8-729-810-19	TRANSISTOR 2SC4396	
L001	1-410-381-11	INDUCTOR CHIP 10UH		Q301	8-729-905-23	TRANSISTOR 2SA1576T106R	
L002	1-410-381-11	INDUCTOR CHIP 10UH		Q302	8-729-117-54	TRANSISTOR 2SA1175	
L050	1-421-983-11	COIL, CHOKE 700UH		Q303	8-729-100-76	TRANSISTOR 2SA812	
L051	1-421-983-11	COIL, CHOKE 700UH		Q304	8-729-810-10	TRANSISTOR 2SA1676	
L052	1-410-627-11	COIL, CHOKE 100UH		Q307	8-729-810-19	TRANSISTOR 2SC4396	
L052	1-410-627-11	COIL, CHOKE 100UH		Q308	8-729-810-25	TRANSISTOR 2SC4397	
L053	1-410-389-11	INDUCTOR CHIP 47UH		Q309	8-729-102-07	TRANSISTOR 2SC2223-F13	
L200	1-410-377-11	INDUCTOR CHIP 4.7UH		Q310	8-729-102-07	TRANSISTOR 2SC2223-F13	
L201	1-410-377-11	INDUCTOR CHIP 4.7UH		Q311	8-729-905-35	TRANSISTOR 2SC4081R	
L202	1-410-377-11	INDUCTOR CHIP 4.7UH		Q312	8-729-905-35	TRANSISTOR 2SC4081R	
L203	1-410-377-11	INDUCTOR CHIP 4.7UH		Q313	8-729-905-35	TRANSISTOR 2SC4081R	
L204	1-410-384-11	INDUCTOR CHIP 18UH		Q314	8-729-810-19	TRANSISTOR 2SC4396	
L301	1-408-777-00	INDUCTOR CHIP 10UH		Q315	8-729-810-13	TRANSISTOR 2SA1677	
L302	1-408-793-21	INDUCTOR CHIP 220UH		Q316	8-729-810-10	TRANSISTOR 2SA1676	
L303	1-412-029-11	INDUCTOR CHIP 10UH		Q317	8-729-905-35	TRANSISTOR 2SC4081R	
L304	1-410-385-11	INDUCTOR CHIP 22UH		Q318	8-729-905-35	TRANSISTOR 2SC4081R	
L305	1-410-732-21	INDUCTOR CHIP 0.18UH		Q319	8-729-810-10	TRANSISTOR 2SA1676	
L306	1-410-383-11	INDUCTOR CHIP 15UH		Q321	8-729-810-19	TRANSISTOR 2SC4396	
L307	1-412-033-11	INDUCTOR CHIP 220UH					
L308	1-412-033-11	INDUCTOR CHIP 220UH					
	PHOTO TRANSISTOR						
PH001	8-729-905-07	PHOTO TRANSISTOR PT480FI					
PH002	8-729-905-07	PHOTO TRANSISTOR PT480FI					
	TRANSISTOR						
Q001	8-729-808-18	TRANSISTOR 2SB926					
Q002	8-729-905-35	TRANSISTOR 2SC4081R					
Q005	8-729-903-10	TRANSISTOR FMW1					
Q006	8-729-903-10	TRANSISTOR FMW1					
Q007	8-729-905-45	TRANSISTOR DTA143EU					
Q008	8-729-905-23	TRANSISTOR 2SA1576R					
Q051	8-729-805-25	TRANSISTOR 2SB1121-T					
Q052	8-729-805-25	TRANSISTOR 2SB1121-T					
Q053	8-729-904-07	TRANSISTOR FMG2					
Q054	8-729-905-23	TRANSISTOR 2SA1576R					
Q055	8-729-810-19	TRANSISTOR 2SC4396					
Q070	8-729-903-97	TRANSISTOR FMS1FE					
Q071	8-729-904-07	TRANSISTOR FMG2					
Q073	8-729-905-45	TRANSISTOR DTA143EU					
Q074	8-729-810-19	TRANSISTOR 2SC4396					
Q076	8-729-810-19	TRANSISTOR 2SC4396					
Q078	8-729-810-10	TRANSISTOR 2SA1676					
Q079	8-729-810-13	TRANSISTOR 2SA1677					

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>				<u>Remark</u>	<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>				<u>Remark</u>
R029	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R095	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R030	1-216-045-00	METAL GLAZE	680	5%	1/10W		R096	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R031	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W		R097	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R032	1-216-041-00	METAL GLAZE	470	5%	1/10W		R099	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R033	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W		R100	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R034	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R101	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R038	1-216-089-00	METAL GLAZE	47K	5%	1/10W		R102	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R040	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R103	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R041	1-216-089-00	METAL GLAZE	47K	5%	1/10W		R104	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R045	1-216-043-00	METAL GLAZE	560	5%	1/10W		R108	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R050	1-249-413-11	CARBON	470	5%	1/4W		R109	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R051	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W		R110	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R052	1-216-035-00	METAL GLAZE	270	5%	1/10W		R111	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R053	1-216-298-00	METAL GLAZE	2.2	5%	1/10W		R112	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R054	1-216-298-00	METAL GLAZE	2.2	5%	1/10W		R200	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R055	1-216-298-00	METAL GLAZE	2.2	5%	1/10W		R201	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R056	1-216-041-00	METAL GLAZE	470	5%	1/10W		R202	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R057	1-216-041-00	METAL GLAZE	470	5%	1/10W		R203	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R058	1-216-041-00	METAL GLAZE	470	5%	1/10W		R204	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R059	1-216-037-00	METAL GLAZE	330	5%	1/10W		R205	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R060	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R206	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R061	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R207	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R062	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R208	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R063	1-216-113-00	METAL GLAZE	470K	5%	1/10W		R209	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R064	1-216-085-00	METAL GLAZE	33K	5%	1/10W		R210	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R065	1-216-081-00	METAL GLAZE	22K	5%	1/10W		R211	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R066	1-216-047-00	METAL GLAZE	820	5%	1/10W		R212	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R067	1-216-025-00	METAL GLAZE	100	5%	1/10W		R213	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R068	1-216-049-00	METAL GLAZE	1K	5%	1/10W		R214	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R069	1-216-089-00	METAL GLAZE	47K	5%	1/10W		R215	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R070	1-216-101-00	METAL GLAZE	150K	5%	1/10W		R216	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R071	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R217	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R072	1-216-085-00	METAL GLAZE	33K	5%	1/10W		R229	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R073	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R230	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R074	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W		R231	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R075	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R233	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R076	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R235	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R077	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R236	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R078	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R237	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R079	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R238	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R080	1-216-097-00	METAL GLAZE	100K	5%	1/10W		R240	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R081	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R241	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R082	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R242	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R083	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R243	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R084	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R244	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R085	1-216-105-00	METAL GLAZE	220K	5%	1/10W		R245	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R086	1-216-105-00	METAL GLAZE	220K	5%	1/10W		R246	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R087	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R247	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R090	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R248	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R091	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R249	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R092	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W		R301	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R093	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W		R302	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R094	1-216-073-00	METAL GLAZE	10K	5%	1/10W		R303	1-216-013-00	METAL GLAZE	33	5%	1/10W	

When indicating parts by reference number, please include the board name.

SS-86**FD-6****EJ-4****FV-1**

Ref.No	Part No.	Description	Remark
R304	1-216-019-00	METAL GLAZE 56 5% 1/10W	
R305	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R306	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R307	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R308	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R309	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R310	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R311	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R312	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R313	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R314	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R315	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R316	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R318	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R320	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R322	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R323	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R324	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R325	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R326	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R327	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R328	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R329	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R331	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R332	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R334	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R335	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R336	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R337	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R338	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R339	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R340	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R341	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R342	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R343	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R344	1-216-029-00	METAL GLAZE 150 5% 1/10W	
R345	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R346	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R347	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R348	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R349	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R350	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R351	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R352	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R353	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R354	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R355	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R356	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R357	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R358	1-216-041-00	METAL GLAZE 470 5% 1/10W	

VARIABLE RESISTOR

RV001 1-230-873-11 RES, ADJ, METAL GLAZE 47K

Ref.No	Part No.	Description	Remark
RV002	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV003	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV200	1-230-867-11	RES, ADJ, METAL GLAZE 1K	
RV301	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV302	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV306	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	
<u>HOLDER</u>			
TE001	*3-718-223-01	HOLDER, TE	
TE002	*3-718-223-01	HOLDER, TE	
<u>CRYSTAL</u>			
X001	1-567-885-11	VIBRATOR, CRYSTAL (12MHz)	
X200	1-567-152-00	OSCILLATOR, CERAMIC (4MHz)	

*A-7070-637-A FD-6 BOARD, COMPLETE			

<u>CONNECTOR</u>			
CN150	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
<u>SWITCH</u>			
S150	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (ZERO MEMO)	
S151	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (EDIT REV)	
S152	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (DATE)	
S153	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (COUNT RESET)	
S154	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (EDIT CUE)	
S155	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (TIME)	

*A-7070-639-A EJ-4 BOARD, COMPLETE			

<u>SWITCH</u>			
S169	1-571-102-11	SWITCH, SLIDE (EJECT)	

*A-7070-677-A FV-1 BOARD, COMPLETE			

<u>CONNECTOR</u>			
CN160	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	
<u>SWITCH</u>			
S160	1-571-101-11	SWITCH, SLIDE (POWER)	
S161	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (SLOW)	
S162	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FRAME)	
S163	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PAUSE)	
S164	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PB)	

When indicating parts by reference number, please include the board name.

FV-1

ZM-8

SW-92

PA-13

Ref.No	Part No.	Description	Remark
S165	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FF)	
S166	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (STOP)	
S167	1-571-102-21	SWITCH, SLIDE (REC)	
S168	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (REW)	

	*A-7070-678-A	ZM-8 BOARD, COMPLETE	

		<u>SWITCH</u>	
S970	1-571-315-11	SWITCH, KEY BOARD (TELE)	
S971	1-571-315-11	SWITCH, KEY BOARD (WIDE)	

	A-7070-679-A	SW-92 BOARD, COMPLETE	

		<u>CONNECTOR</u>	
CN930	*1-566-189-11	PIN, CONNECTOR (PC BOARD) 10P	
CN931	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
CN932	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
		<u>JACK</u>	
J930	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)	
J931	1-507-921-00	JACK	
		<u>COIL</u>	
L930	1-410-369-11	INDUCTOR CHIP 1UH	
L932	1-410-369-11	INDUCTOR CHIP 1UH	
		<u>SWITCH</u>	
S930	1-553-977-00	SWITCH, SLIDE (STANDBY)	
S931	1-570-689-11	SWITCH, KEY BOARD (REC START/STOP)	

	*A-7070-730-A	PA-13 BOARD, COMPLETE	

		<u>DIODE</u>	
D990	A.8-719-938-72	DIODE SB01-05CP	
		<u>FUSE</u>	
F990	A.1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A 125V	
F991	A.1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A 125V	
		<u>BATTERY HOLDER</u>	
J991	1-550-104-32	HOLDER, BATTERY	
		<u>COIL</u>	
L990	1-412-026-11	INDUCTOR CHIP 1UH	
L991	1-412-026-11	INDUCTOR CHIP 1UH	

Ref.No	Part No.	Description	Remark
L992	1-412-026-11	INDUCTOR CHIP 1UH	
		<u>SWITCH</u>	
S990	1-570-870-21	SWITCH, SLIDE (EDIT)	
		<u>CONNECTOR</u>	
W991	1-559-927-41	CABLE, FLAT (1.0MM PITCH) 5P	
W992	1-535-658-11	TERMINAL BOARD	

		<u>MISCELLANEOUS</u>	

	A-7030-081-A	CCD ASSY (CCD IMAGER)	
	A. A-7048-173-A	DRUM ASSY (DGM-20B-R)	
	1-464-993-11	CONVERTER, DC-DC	
	1-535-574-11	TERMINAL, SHAFT GROUND	
	1-542-101-11	MICROPHONE (C-2020)	
	1-547-284-11	LENSE, ZOOM (VCL-906XB)	
	1-562-879-11	CONNECTOR, CARD EDGE 19P	
	1-562-880-11	CONNECTOR, CARD EDGE 15P	
	1-574-083-11	CABLE, FLAT (1.0MM PITCH) 15P	
	1-626-231-11	FP-118 FLEXIBLE BOARD	
	1-626-232-11	FP-123 FLEXIBLE BOARD	
	1-807-238-11	SENSOR, DEW CONDENSATION	
	1-808-385-11	L.C.D	
J360	1-565-298-11	JACK, PIN 2P (AV IN)	
J361	1-537-142-11	TERMINAL BOARD (AV OUT)	
L951	A.1-451-310-21	DEFLECTION YOKE (B/W)	
M902	8-835-309-01	MOTOR, DC BHF-3301C (CAPSTAN)	
M903	A.1-541-508-11	MOTOR, DC (LA14-323F) (LOADING)	
M904	3-707-442-01	METER, IG (IRIS MOTOR)	
M905	3-707-448-01	MOTOR UNIT, AF	
M906	3-707-452-01	MOTOR UNIT, ZOOM	
S902	1-553-226-00	SWITCH, LEAF (CASSETTE DOWN)	
V901	A.1-546-065-11	CATHODE-RAY TUBE, B/W (MOIJVV47W8)	

Note:
The components identified by mark **A** or dotted line with mark **A** are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
1-574-039-11	CORD, CONNECTION	
*3-340-514-01	BAG, PROTECTION	
*3-725-185-01	CUSHION (UPPER)	
*3-725-186-01	CUSHION (LOWER)	
3-786-051-21	MANUAL, INSTRUCTION (F40)	
3-786-051-81	MANUAL, INSTRUCTION (F340)	

ACCESSORIES AND PACKING MATERIALS (KIT)

1-571-163-11	SWITCH, ANTENNA CHANGE (CABLE)	
3-712-595-21	BELT, SHOULDER	
*3-725-169-01	SLEEVE, ACC KIT	
*3-725-170-01	ACC CUSHION (UPPER)	
*3-725-171-01	ACC CUSHION (LOWER)	
*3-728-625-01	ACC INDIVIDUAL CARTON	
** AC-V33	AC POWER ADAPTOR	
*** RFU-89	RF MODULATOR	
*** NP-22H	RECHARGABLE BATTERY	
**	MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.	
***	MARK PARTS IS AVAILABLE AS A OPTIONAL ACCESSORIES.	

● HARDWARE LIST

SCREW

7-621-255-15	SCREW +P	2X3
7-621-255-45	SCREW +P	2X6
7-621-281-15	SCREW +P	2X2
7-621-772-00	SCREW +B	2X3
7-627-552-07	SCREW, PRECISION +P	1.7X2.5
7-627-553-37	SCREW, PRECISION +P	2X3 TYPE 3
7-627-850-17	SCREW, PRECISION +P	1.4X2.5
7-627-852-18	SCREW, PRECISION +P	1.7X4 TYPE3
7-627-852-38	SCREW, PRECISION +P	1.7X1.8 TYPE3
7-685-104-19	SCREW +P	2X6 TYPE2 NON-SLIT
7-685-105-19	SCREW +P	2X8 TYPE2 NON-SLIT
7-685-203-19	SCREW +KTP	2X5 TYPE2 NON-SLIT

STOP RING

7-624-101-01	STOP RING 1.2 (E TYPE)
7-624-102-04	STOP RING 1.5, TYPE -E

CCD-F40/F340

SONY[®] SERVICE MANUAL

US Model
Canadian Model
CCD-F40
E Model
CCD-F340

SUPPLEMENT-1

ADJUSTMENTS

File this supplement with the service manual.

- **For Mechanical Adjustments**

Refer to mechanical adjustment manual "TYPE 3 (O'MECHANISM)" for the adjustments and checks of mechanism section and the mechanical parts replacement except for these on this manual.

- When adjusting the mechanism without the camera block, disconnect the connector and supply 6.5 ± 0.1 Vdc to the battery terminal from a regulated power supply as described in "Precaution for Adjustment" in Chapter 3, "Video Section Electrical Adjustment". (See page 25.)

- **Correct the part number as shown below.**

P141

286

A-7949-130-A

DRUM ASSY, UPPER (DGR-20-R)



A-7049-130-A

DRUM ASSY, UPPER (DGR-20-R)

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SECTION 1 CAMERA SECTION ADJUSTMENT

During the adjustment see the parts arrangement diagram for adjustment on page 18.

PREPARATION BEFORE ADJUSTMENT (CAMERA SECTION)

1-1. LIST OF SERVICING JIGS

● Oscilloscope ● AC pack ● Screwdriver ● L wrench ● Stop watch ● Color monitor TV ● Vectorscope

Ref. No.	Name	Part Code	Use
J-1	Filter (C22)	J-6080-829-A	Operation check for auto-following white balance
J-2	ND filter 0.4	J-6080-806-A	IRIS set adjustment,
	ND filter 0.1	J-6080-807-A	IRIS set adjustment,
	ND filter 1.0	J-6080-808-A	MAX gain adjustment, (2 pcs.)
J-3	Pattern box PTB-500* ¹	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Flat cable (flexible cable of 15P)	J-6082-019-A	1 pc.
J-6	Extension cable (7P)	J-6080-917-A	1 pc.
	Extension cable (4P)	J-6080-914-A	2 pcs.
	Extension cable (8P)	J-6080-819-A	1 pc.
	Extension cable K (4P)	J-6080-873-A	1 pc.
J-7	Lens block fixing jig	J-6094-894-A	
J-8	Siemens-star	J-6080-875-A	Flange back adjustment

*¹ The PTB-100 (I-6020-490-A) can also be used.

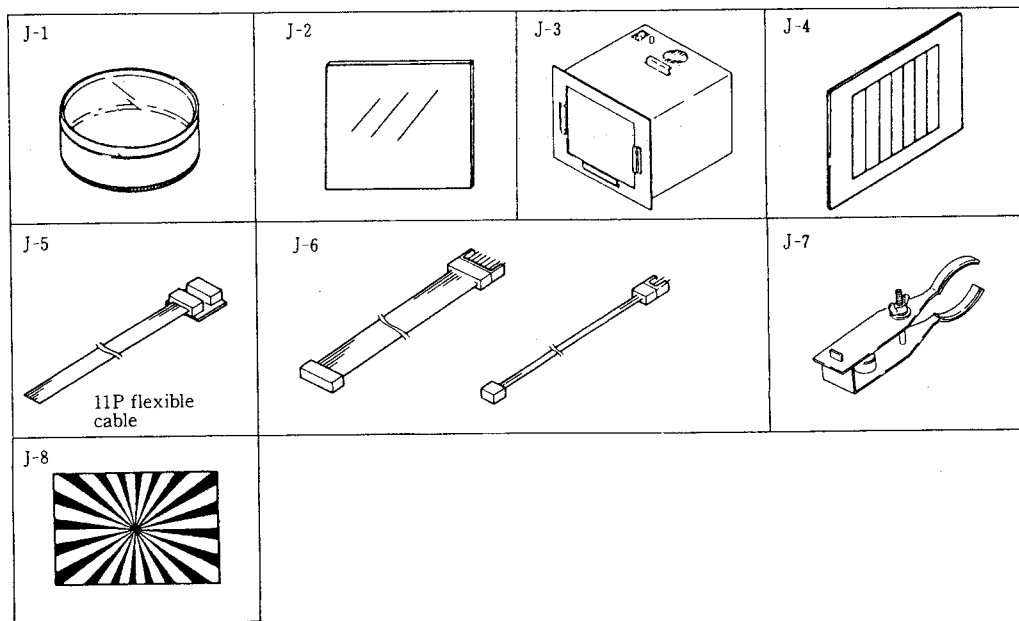


Fig. 1-1

1-2. PREPARATION

Note:

Refer to SECTION 2. DISASSEMBLY as to details for remove the cabinets and boards.

- 1) Remove the camera cover, VTR panel, cabinet (R) and cabinet (L).
- 2) Separate the camera section and video section from each other.
- 3) Open the camera board in the manner mentioned in 2. DISASSEMBLY, 2-5. REMOVING THE VC-38 (CCD IMAGER), VC-39, AND VC-40 BOARDS. (Fig. 1-2.)
- 4) The video block must be connected for adjustments and checks. Connect the extension cable as shown in Fig. 1-3.

Note:

Connect the electronic viewfinder (EVF) also to CN360 of the VA-40 board.

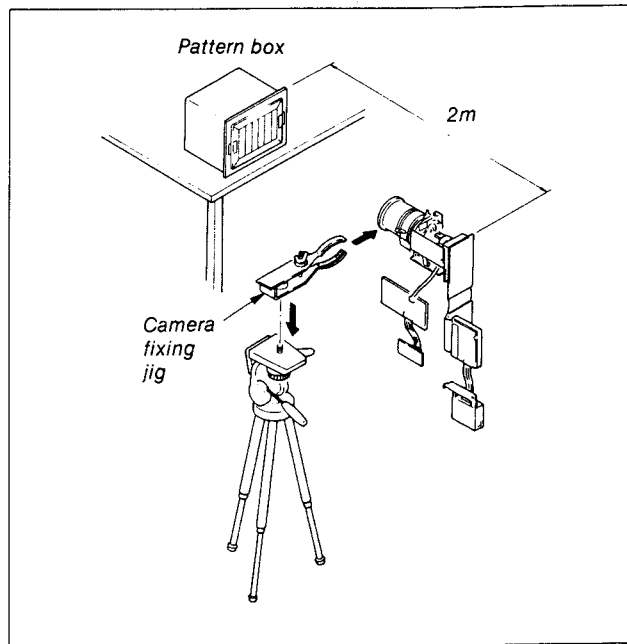
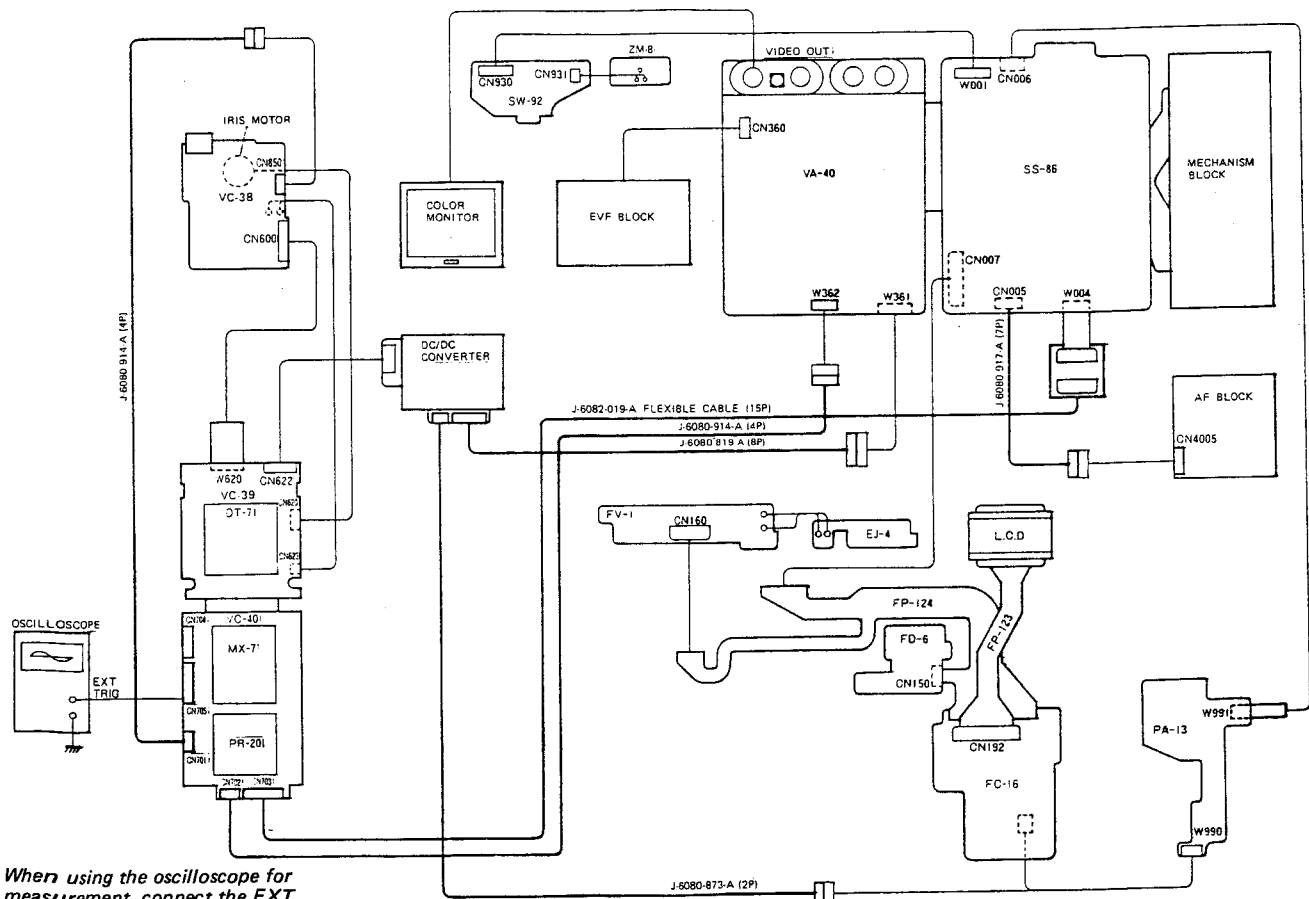


Fig. 1-2



When using the oscilloscope for measurement, connect the EXT TRIG IN terminal to pin ⑧ of CN705 (ID) on the VC-40 board to obtain synchronism, unless otherwise specified.

Fig. 1-3

1-3. PRECAUTIONS

1) Setting the switches

Adjust the switches to the following positions, when not specified:

1. Set the FOCUS switch (FC-16 board, S190) to MANUAL

2) Adjustment Procedure

As a rule, adjust in a described order.

3) Subject

1. Color bar chart (standard picture frame)

Adjust the picture frame as shown in Fig. 1-4. When using a color chart for adjustment. (Standard picture frame).

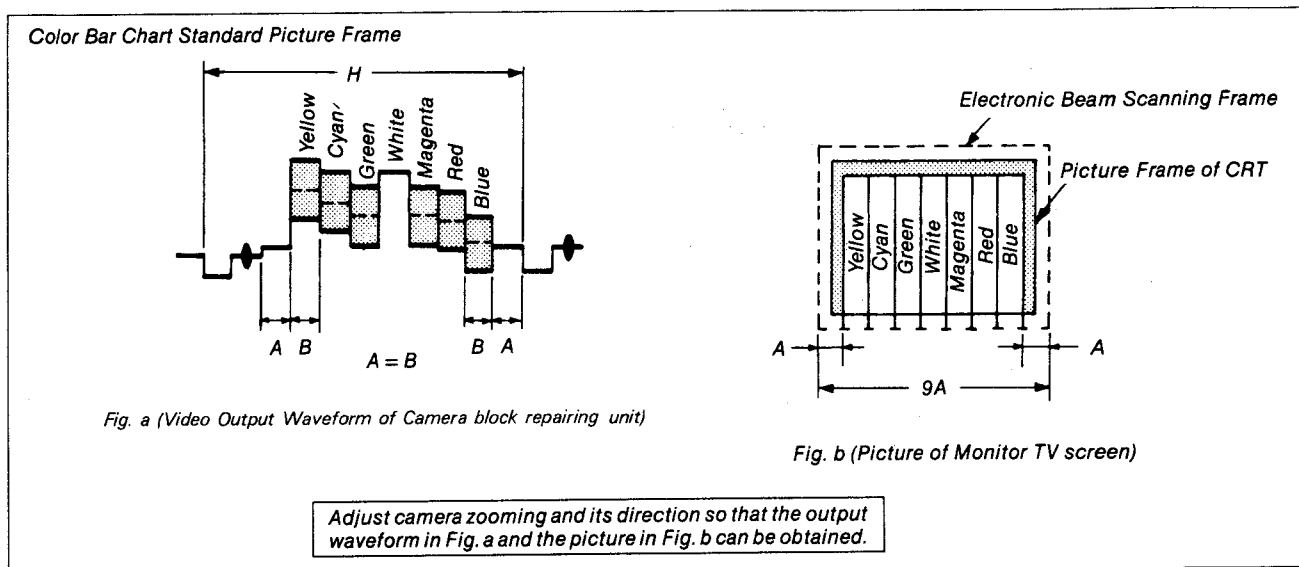


Fig. 1-4

2. Full white pattern

Remove the color bar chart from the pattern box and shift the zoom lever fully to the TELE (72mm) side.

3. High brightness pattern

Create a high brightness pattern as shown in Fig. 1-5, and adjust the picture frame as shown in Fig. 1-6.

4. Siemens star (J-6080-875-A)

Adjust a camera direction so that a siemens star center will coincide with a monitor screen center on the monitor TV screen.

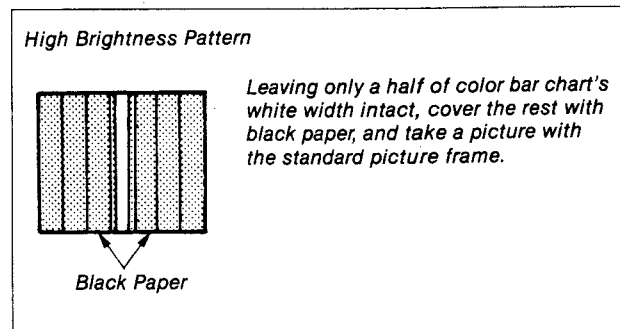


Fig. 1-5

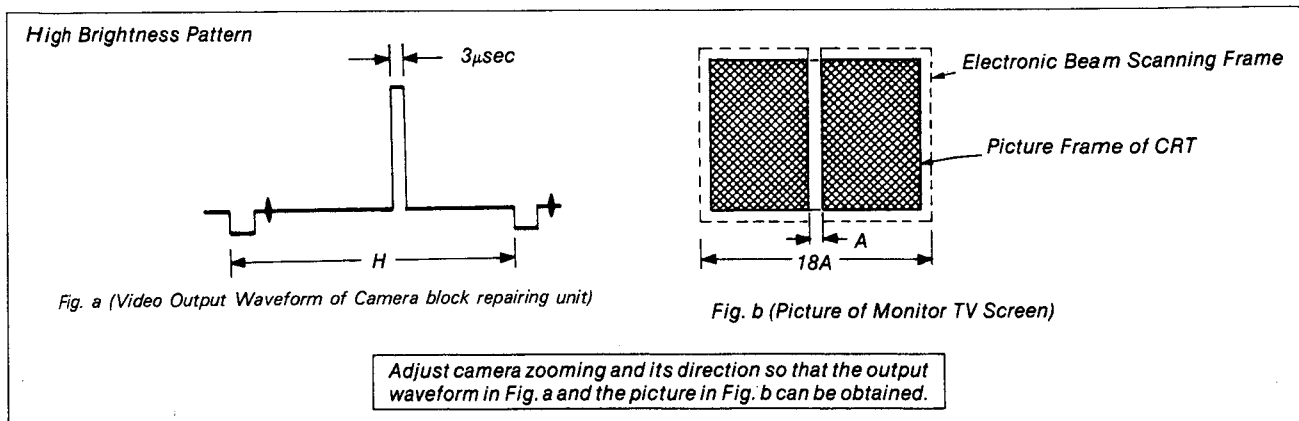


Fig. 1-6

1-4. CAMERA SYSTEM ADJUSTMENT

1-4-1. Flange Back Adjustment

Subject	Siemens star at a distance of 2m in the front of a lens datum level (marked with ϕ)
Measurement point	
Measurement equipment	Confirm with the monitor TV.
Adjustment element	Flange back adjustment top
Tools	Regular screwdriver

[Adjustment Method]

- 1) Set the AUTO LOCK switch (FC-16 board, S190) to a MANUAL position.
- 2) Place the Siemens star at a distance of 2m in the front of the lens datum level (see Fig. 1-2).
- 3) Adjust the position of the camera section so that the center of the Siemens star displayed on the monitor screen will coincide with the center of the monitor screen.
- 4) Check that the lens zoom lever can be rotated fully to WIDE (12mm) and TELE (72mm), and rotate fully to the WIDE side. (Also check that the monitor screen is zooming.)
- 5) Push the BACK LIGHT button (FC-16 board, S196) to set up BACK LIGHT mode and open iris.
- 6) Set the stopper rubber " ∞ " side to the center of three lines on the main mirror tube (see Fig. 1-7).

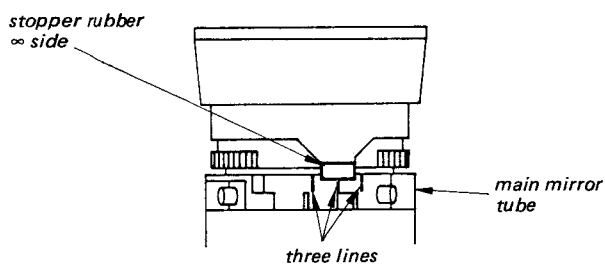


Fig. 1-7

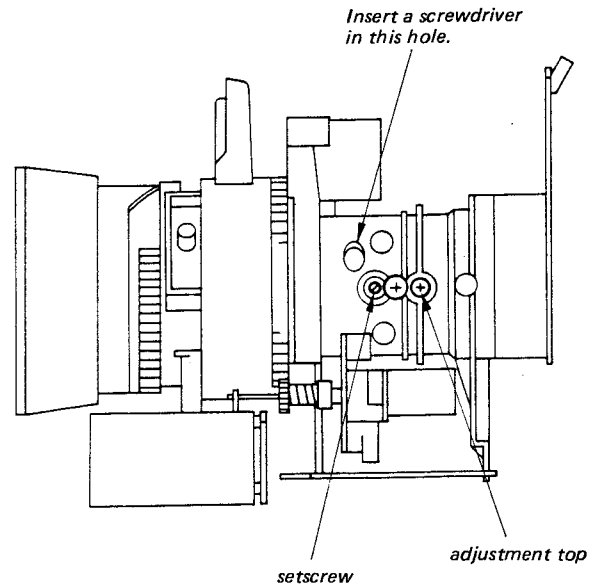


Fig. 1-8

- 7) Loosen the setscrew. (See Fig. 1-8.)
- 8) Insert a screwdriver into the hole on the rear of the mirror tube, and rotate the frame of master lens with the edge of the screwdriver.
- 9) Adjust the focus with rotating the adjustment top so to maximize the contrast of the chart. (With loosening the setscrew.)
- 10) Readjust the focus with the focus ring.
- 11) Confirm that the stopper rubber " ∞ " side is in between the side lines. (When it is out of the side lines, repeat items 8) and 9).)
- 12) Screw in the setscrew with pressing the adjustment top not to move. (When it moves, repeat items from the item 6).)
- 13) Confirm with repeat items 10) and 11).

1-4-2. DC-DC Converter Voltage Check (VC-40 Board)

Measurement equipment	Digital voltmeter
5V check	
Specified value	$5.00 \pm 0.05\text{V}$
Measurement point	Pin ① of CN622
15V check	
Specified value	$15.0 \pm 0.3\text{V}$
Measurement point	Pin ④ of CN622
32V check	
Specified value	$32 \pm 0.5\text{V}$
Measurement point	Pin ⑤ of CN622

Note:

Check with the EVF section connected.

[Confirmation Method]

- 1) Each supply voltage should satisfy its specified value.

1-4-3. Voltage Adjustment (VC-38 Board)

Subject	Arbitrary
Measurement point	Pin ③ of CN601
Measurement equipment	Digital volt meter
Adjustment element	RV600
Specified value	(Voltage printed on Imager) $\pm 0.05\text{Vdc}$

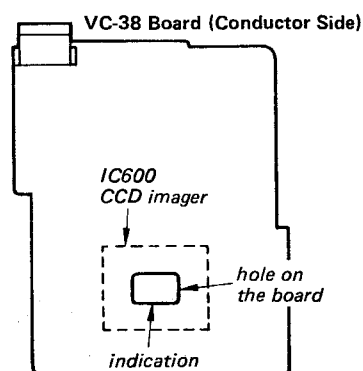
[Adjustment Method]

Adjust with RV600 so that the reading on the digital voltmeter becomes (Voltage printed on Imager) $\pm 0.05\text{Vdc}$.

Note:

V_{SUB} standard voltage is indicated by two units, "Integer section simplified code" and "Dicimal section".

integer section simplified code	integral number
1	1
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21



Example: F5 is indicated.
The integer is F: 15.
The decimal is 5: 0.5.
Therefore, the V_{SUB} voltage is;
 $15 + 0.5 = 15.5 (\text{Vdc})$.

Fig. 1-9

1-4-4. Iris Set Adjustment (VC-39 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 0.4 and 0.1
Measurement point	Pin ① of CN601 (CCD OUT) on the VC-39 board
Measurement equipment	Oscilloscope
Adjustment element	RV622 (IRIS SET)
Specified value	$200 \pm 5\text{mVp-p}$

[Adjustment Method]

- 1) With no ND filter attached, adjust a signal level to $200 \pm 5\text{mVp-p}$ using RV622.
(Be sure to complete adjustment by turning RV622) in the direction which reduces the signal level.
- 2) Attach the ND filter 0.5 (0.4 + 0.1) to the front of the lens, and confirm that the signal level changes smoothly.
- 3) Detach the ND filter, and confirm that the signal level is $200 \pm 5\text{mVp-p}$.
- 4) When the specified value is not satisfied, repeat the above-mentioned steps 1) through 3).

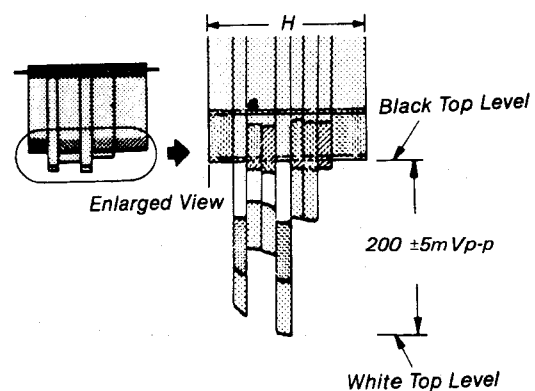


Fig. 1-10.

1-4-5. AGC Set Adjustment (VC-39 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ① of CN704 on the VC-39 board
Measurement equipment	Oscilloscope
Adjustment element	RV621 (AGC SET) of the IA-1 board
Specified value	$170 \pm 5\text{mVp-p}$

Note:

Set to the mechanical center the following RV on the VC-39 board:

1. RV620 (MAX GAIN)

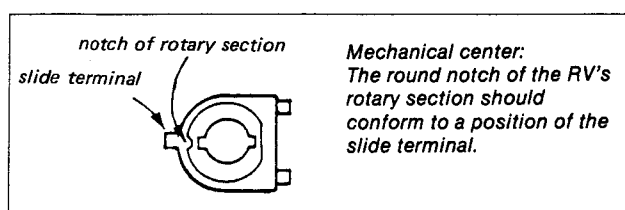


Fig. 1-11

[Adjustment Method]

Adjust a signal level to $170 \pm 5\text{mVp-p}$ with RV621 of the IA-1 board.

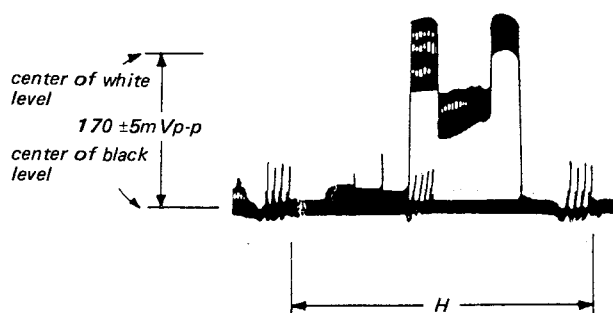


Fig. 1-12

1-4-6. Matrix Adjustment (1) (VC-40 Board)

Subject	Color bar standard picture frame
Measurement point	CH1: Pin ④ of CN704 on VC-40 board (Y_0) CH2: Pin ⑤ of CN704 on VC-40 board (Y_1)
Measurement equipment	Oscilloscope
Adjustment element	RV706 (Y_1 GAIN)
Specified value	$Y_0 = Y_1$

[Adjustment Method]

Adjust with RV706 so to equalize Y_1 level to Y_0 level.

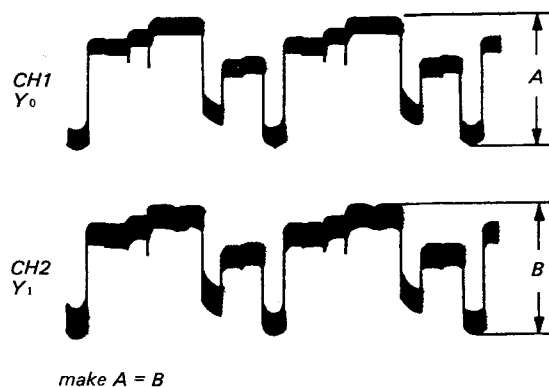


Fig. 1-13

1-4-7. Matrix Adjustment (2) (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	CH1: Pin ⑥ of CN704 on VC-40 board (C_0) CH2: Pin ⑦ of CN704 on VC-40 board (C_1)
Measurement equipment	Oscilloscope
Adjustment element	RV707 (C_1 GAIN)
Specified value	$C_0 = C_1$

[Adjustment Method]

Adjust with RV707 so to equalize C_1 level to C_0 level.

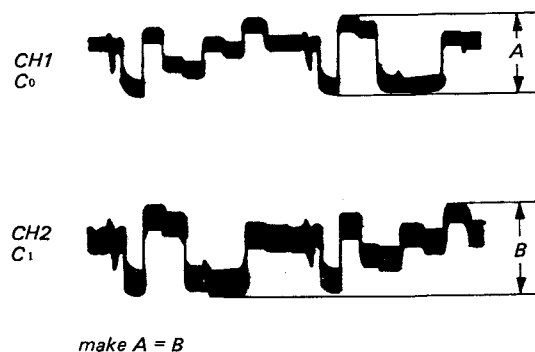


Fig. 1-14

1-4-8. Matrix Adjustment (3) (VC-40 Board)

Subject	Color bar standard picture frame
Measurement point	CH1 (X): Pin ②① of PR-20 (HIC) board (B-Y) CH2 (Y): Pin ②② of PR-20 (HIC) board (R-Y)
Measurement equipment	Oscilloscope (X-Y mode)
Adjustment element	RV705 (VC-40 board)
Specified value	Minimize the bright points of each color

[Adjustment Method]

Adjust with RV705 so to make the bright points of each color to one point or to minimize.

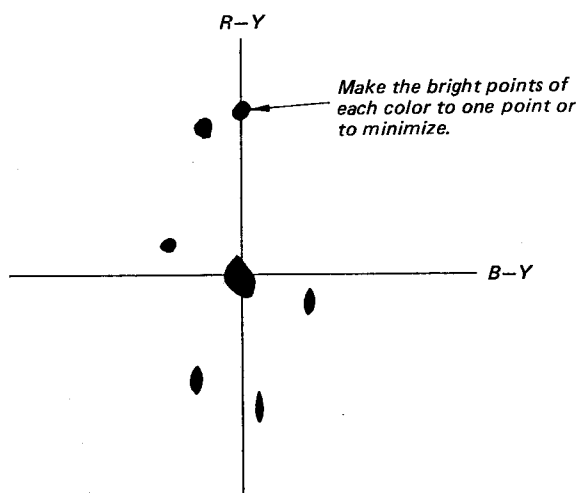


Fig. 1-15

1-4-9. YH Level Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ④ of CN705 (YH OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV701
Specified value	$450 \pm 10\text{mVp-p}$

[Adjustment Method]

Adjust with RV701 so that the white level becomes $450 \pm 10\text{mVp-p}$.

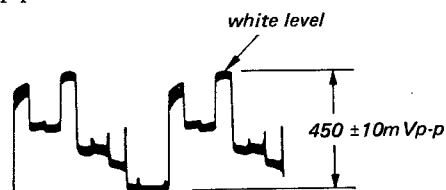


Fig. 1-16

1-4-10. Chroma Level Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ② of CN705 (Gr/G WB)
Measurement equipment	Oscilloscope
Adjustment element	RV710 (C LEVEL)
Specified value	$400 \pm 10\text{mVp-p}$

[Connection]

Before adjusting, make short-circuit between pin ③ of CN705 on VC-40 board and GND.

[Adjustment Method]

Adjust with RV710 so that the chroma level becomes $400 \pm 10\text{mVp-p}$.



Fig. 1-17

1-4-11. Burst Level Adjustment (VC-40 Board)

Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV722
Specified value	$190 \pm 5\text{mVp-p}$

[Adjustment Method]

Adjust with RV722 so that the burst level becomes $190 \pm 5\text{mVp-p}$.



Fig. 1-18

1-4-12. Pre-White Balance Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV708 (R GAIN) RV709 (B GAIN)
Specified value	Minimize white portion carrier

[Adjustment Method]

Adjust with RV708 and RV709 mutually so to minimize the white portion carrier.

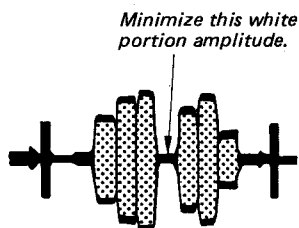


Fig. 1-19

1-4-13. Color Reproducibility Adjustment (Use a Vectorscope) (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	J361 on VA-40 board (VIDEO OUT)
Measurement equipment	Vectorscope
Adjustment element	RV714 (B-Y GAIN) RV715 (R-Y GAIN) RV712 (B-Y HUE) RV713 (R-Y HUE)
Specified value	Each color bright point should be within a color reproduction frame. (See Fig. 1-20)

[Adjustment Method]

Adjust with RV714, RV715, RV712, and RV713 mutually so to place each color bright point within the color reproduction frame.

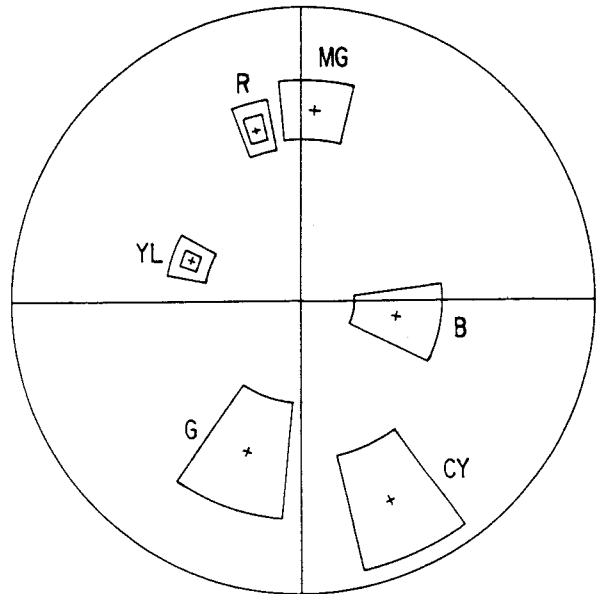
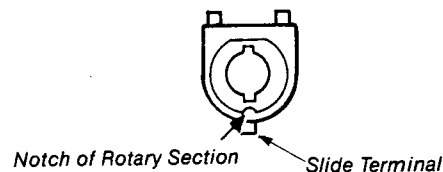


Fig. 1-20

1-4-14. Color Reproducibility Adjustment (Use an Oscilloscope)

A. Gain Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV714 (B-Y GAIN) RV715 (R-Y GAIN)
Specified value	"red" level: $340 \pm 20\text{mVp-p}$ "Yellow" level: $240 \pm 15\text{mVp-p}$



Mechanical center: The round notch of the RV's rotary section should coincide with the position of the slide terminal.

Fig. 1-21

[Adjustment Method]

- 1) Set RV712 (B-Y HUE) and RV713 (R-Y HUE) on the VC-40 board to the mechanical center. (See Fig. 1-21.)
- 2) Adjust an amplitude of "red" to $340 \pm 20\text{mVp-p}$ with RV715.
- 3) Adjust an amplitude of "yellow" to $240 \pm 15\text{mVp-p}$ with RV714.

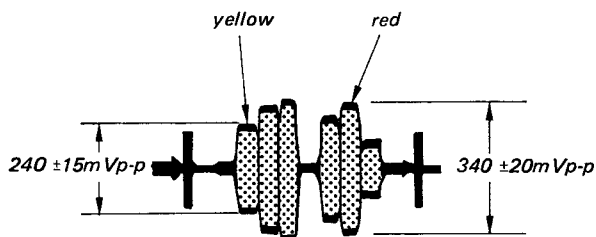


Fig. 1-22

B. HUE Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	CH1 (X): Pin ②① of PR-20 (HIC) board (B-Y) CH2 (Y): Pin ②② of PR-20 (HIC) board (R-Y)
Measurement equipment	Oscilloscope (X-Y mode)
Adjustment element	RV712 (B-Y HUE) RV713 (R-Y HUE)
Specified value	Each color bright point should be within the color reproduction frame.

[Adjustment Method]

Place a "red" bright point and a "yellow" bright point within the color reproduction frame with RV712 and RV713.

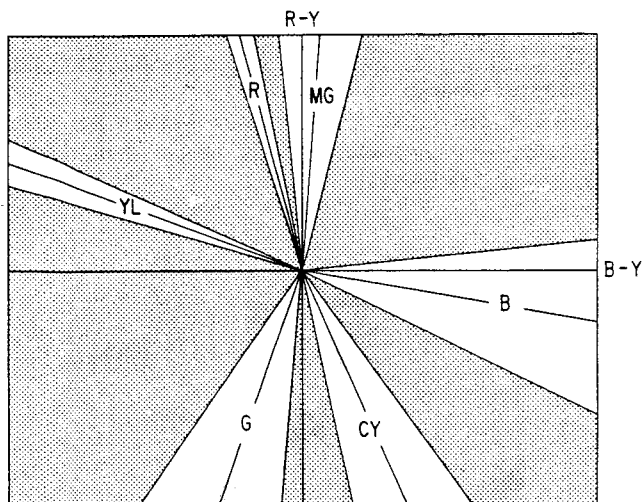


Fig. 1-23

1-4-15. Setup Adjustment (VC-40 Board)

Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV719
Specified value	50 ± 5mVp-p

[Adjustment Method]

Adjust a setup level to 50 ± 5mVp-p with RV719.

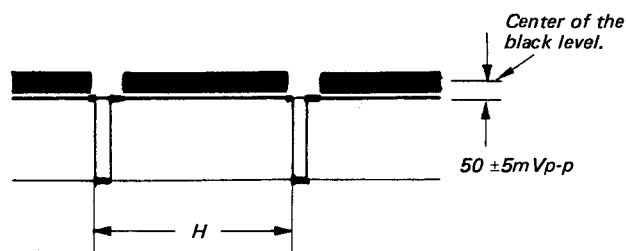


Fig. 1-24

1-4-16. SYNC Level Adjustment (VC-40 Board)

Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV720
Specified value	285 ± 5mVp-p

[Adjustment Method]

Adjust with RV720 so that the SYNC level becomes 285 ± 5mVp-p.

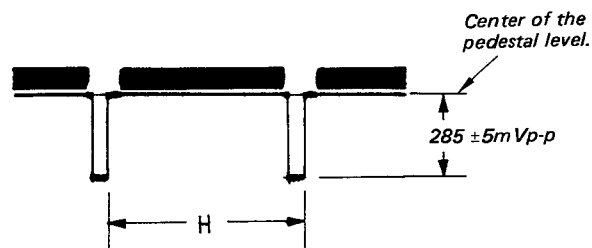


Fig. 1-25

1-4-17. White Clip Adjustment (VC-40 Board)

Subject	High brightness pattern
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV718
Specified value	$840 \pm 20\text{mVp-p}$

Note: Set RV717 as Fig. 1-26.

The round notch of the rotary section should be at this position.

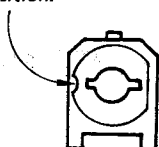


Fig. 1-26

[Adjustment Method]

- 1) Adjust a signal level to $840 \pm 20\text{mVp-p}$ with RV718.
- 2) Perform Y Level Adjustment.

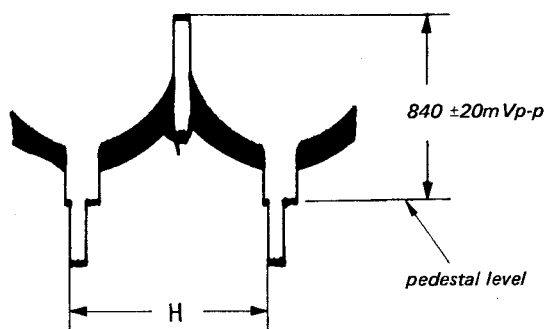


Fig. 1-27

1-4-18. Y Level Adjustment (VC-40 Board)

Subject	Color bar chart (Standard picture frame)
Measurement point	Pin ③ of CN702 (Y OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV717
Specified value	$650 \pm 10\text{mVp-p}$

[Adjustment Method]

Adjust the Y level to $650 \pm 10\text{mVp-p}$ with RV717.



Fig. 1-28

1-4-19. Aperture Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ③ of CN702 (Y OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV716
Specified value	$150 \pm 5\text{mV}$

[Adjustment Method]

Adjust with RV716 so that the level between the peak between magenta and white and the center of the white level becomes $150 \pm 5\text{mV}$.

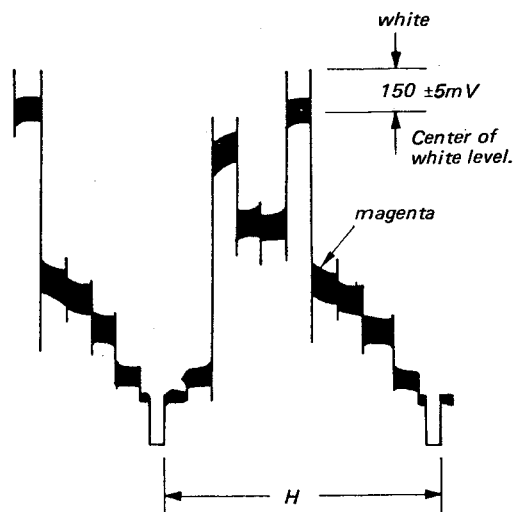


Fig. 1-29

1-4-20. Max. Gain Adjustment (VC-39 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 1.0 ... 2 pcs. and 0.4 ... 1 pc.
Measurement point	Pin ③ of CN702 (VC-40 board)
Measurement equipment	Oscilloscope
Adjustment element	RV602
Specified value	$360 \pm 10\text{mVp-p}$

[Adjustment Method]

- 1) Cover an ND filter 2.4 (1.0 + 1.0 + 0.4) in front of the lens.
- 2) Adjust to $360 \pm 10\text{mVp-p}$ with RV602.

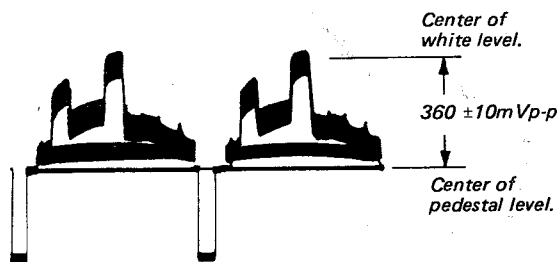


Fig. 1-30

1-4-21. Auto-following White Balance Adjustment (VC-38 Board)

Subject	White pattern *Note 1)
Measurement point	CH1: Pin ④ of CN850 (R CONT) CH1: Pin ③ of CN850 (B CONT)
Measurement equipment	Oscilloscope (DC range)
Adjustment element	RV850

Note 1:

Make white-balance sensor (VC-38 board SB850) incident by light through white-dispersing plate which can be applied with the conventional white-lens cap of camera.

Note 2:

No exact adjustment is made by the incident light except pattern-box to the white-balance box.

It is desirable to make adjustment in a dark room, but if it is impossible, make adjustment after taking the following procedures.

1. Place the camera on black paper.
(This procedure is necessary for the adjustment in a dark room.)
2. Approach the distance between camera and pattern box to less than 0.5m.
3. Cover a black paper on white-balance sensor for preventing the incident light except pattern box to the white-balance sensor.

[Connection]

- 1) Short-circuit CN851 pins ① and ② on VC-38 board to ground.

[Adjustment Method]

- 1) Turn RV850, and confirm that CH1 takes 2 values of "L" (0.5Vdc) and "H" (1.0Vdc), also that CH2 takes 2 values of "L" (1.0Vdc) and "H" (1.9Vdc).
- 2) Turn RV850 slowly, and stop it when CH1 shows the position of "L" (0.5Vdc) and CH2 shows the position of "H" (1.9Vdc).

1-4-22. Check for Auto-following White Balance

Subject	All white pattern
Measurement point	CH1 (X): Pin ② of PR-20 (HIC) board CH2 (Y): Pin ② of PR-20 (HIC) board
Measurement equipment	Oscilloscope (X-Y mode)

[Checking Method]

Confirm the white bright point is its original point.

1-4-23. Check for Backlight Compensation

Subject	Color bar chart standard image frame
Measurement point	J361 on VA-40 board (VIDEO OUT)
Measurement equipment	Oscilloscope

[Confirmation Method]

- 1) Push the button for backlight compensation (FC-16 board S196).
- 2) Confirm the output level becomes higher.

1-5. AUTO FOCUS SYSTEM ADJUSTMENT

1-5-1. SPC Parallax Adjustment

Subject	SPC prallax adjusting chart (See Fig. 1-31)
Measurement point	Monitor TV
Measurement equipment	Monitor TV
Adjustment element	SPC board
Adjustment tool	Phillips headed screwdriver
Specified value	Coincidence SPC position with the light from the pattern box.

[Adjustment Method]

- 1) Set the chart to the pattern-box, and install it 3m distance from the front lens.
- 2) Set the center of the chart on the monitor TV screen to the center of the monitor TV screen, and focus.
- 3) Loosen two screws (a). (See Fig. 1-32.)

Note:

Remove the locking compound not to move the SPC board when installing by screw-in.

- 4) Make coincidence SPC position with the light from the pattern box by moving SPC board. And screw in the screw (a).

Note:

Attach importance to the upper and lower directions.

- 5) Apply suitable locking compound.

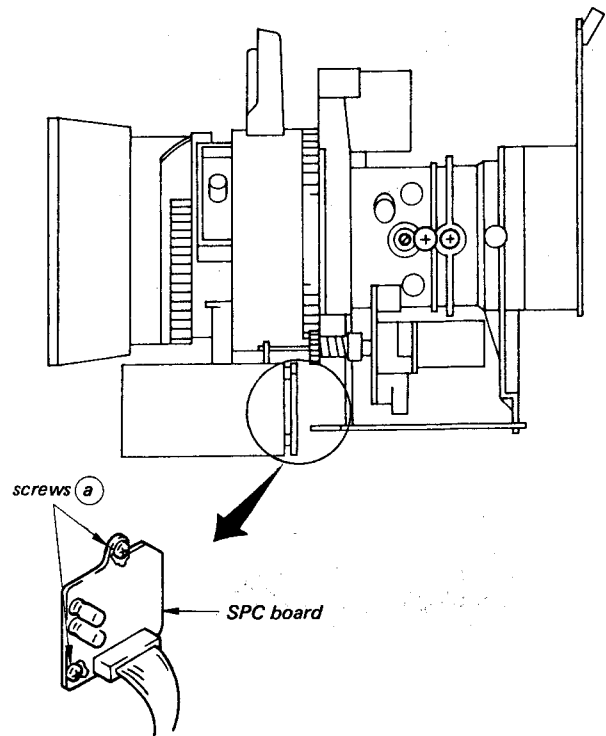


Fig. 1-32

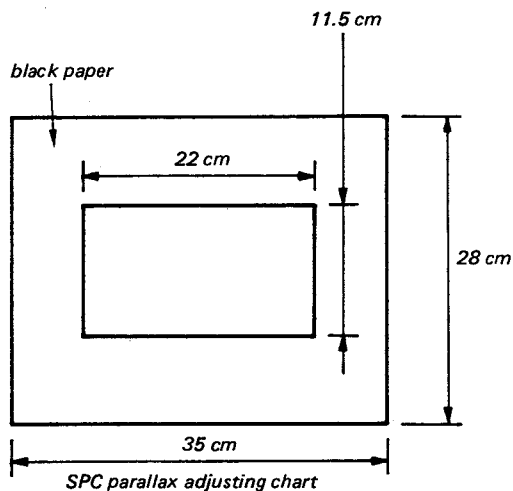


Fig. 1-31

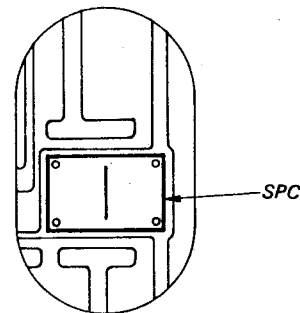


Fig. 1-33

1-5-2. AF Range Finder Adjustment

Subject	AF range finding chart (see Fig. 1-34)
Measurement point	Monitor TV
Measurement equipment	Monitor TV
Adjustment element	Range finder adjusting screw
Adjustment tool	Hexagonal wrench (1.25mm)

[Adjustment Method]

- 1) Set the chart 2m distance from the front lens.
- 2) Set the zoom lever to "TELE" side, and the center of the chart to the center of the monitor TV screen.
- 3) Insert the hexagonal wrench to the hole on the bottom of the set, and focus with turning the AF adjusting screw. (See Fig. 1-35.)
- 4) Rotate the focus ring by hand to "∞" side and "1.2m" side, and release it. In this time, confirm not to overrun the focus (once just focusing and again out of focus).
- 5) When overrunning the focus, repeat items 3) and 4).
- 6) Put on the lid to the hole for AF adjustment on the cabinet.

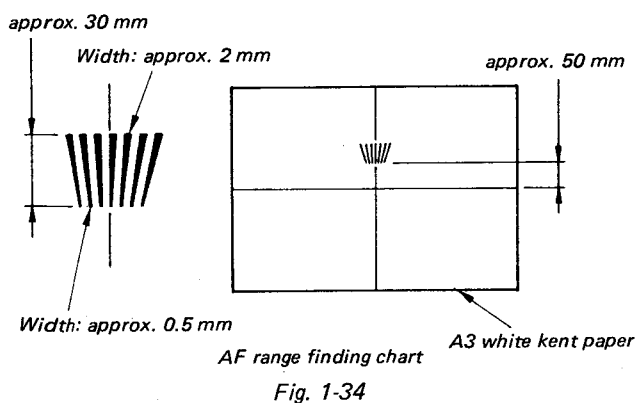


Fig. 1-34

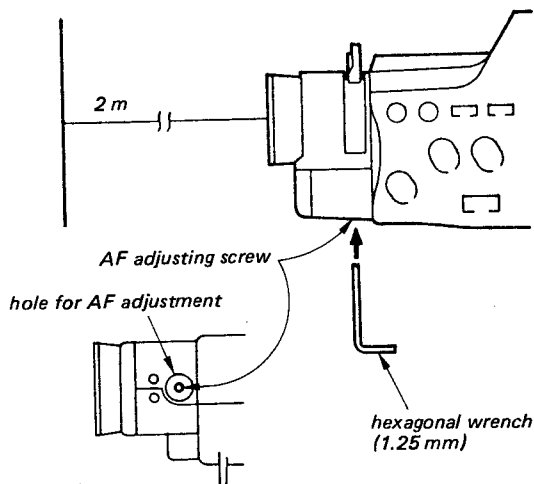


Fig. 1-35

1-6. DATA DISPLAY/DIGITAL TITLER BLOCK ADJUSTMENT

1-6-1. AD Converter Level Adjustment (SS-86 Board)

Mode	Camera standby
Subject	All black (Cover lens with black cap)
Measurement point	+ probe: Pin ② of IC203 - probe: Pin ③ of IC203
Measurement equipment	Digital voltmeter
Adjustment element	RV200
Specified value	385 ±5mVdc

[Adjustment Method]

Adjust to 385 ±5mVdc with RV200.

1-6-2. Chroma Blanking Level Adjustment (VC-40 Board)

Mode	Camera standby
Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV711
Specified value	Minimize the carrier

[Adjustment Method]

- 1) Press "TITLE 1" (S191 on FC-16 board) or "TITLE 2" (S192 on FC-16 board) button.
- 2) Memorize 'All black' by pressing "MEMORY" button.
- 3) Select white by pressing "COLOR" button.
- 4) Minimize the carrier with RV711.

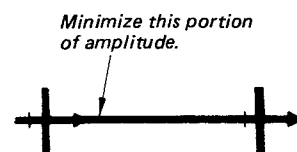


Fig. 1-36

1-6-3. TITLER Y Y Level Adjustment (VC-40 Board)

Mode	Camera standby
Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV724
Specified value	$570 \pm 10\text{mVp-p}$

[Adjustment Method]

- 1) Press "TITLE 1" (S191 on FC-16 board) or "TITLE 2" (S192 on FC-16 board) button.
- 2) Memorize 'All black' by pressing "MEMORY" button.
- 3) Select white by pressing "COLOR" button.
- 4) Adjust with RV724 to $570 \pm 10\text{mVp-p}$.



Fig. 1-37

1-6-4. PLL Error Voltage Adjustment (SS-86 Board)

Mode	Standby camera
Object	Optional
Measurement point	See Fig. 1-38.
Meter	Digital voltmeter
Adjustment device	CT200
Specified value	$2.5 \pm 0.05\text{V}$

[Adjustment Method]

- 1) Press the TITLE 1 button (S191 on the FC-16 board).
- 2) Check that the voltage at pin ⑥ of IC202 is higher than 4.0V.
- 3) Press the MEMORY button (S193 on the FC-16 board).
- 4) Adjust CT200 to set the voltage at the $2.5 \pm 0.05\text{V}$ measurement point shown in Fig. 1-38.

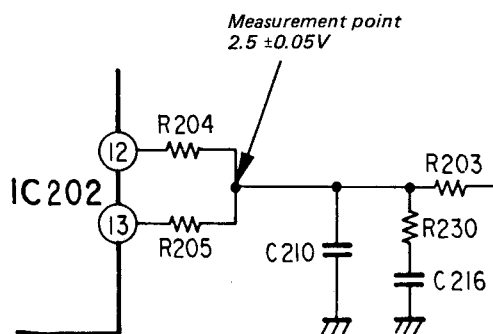
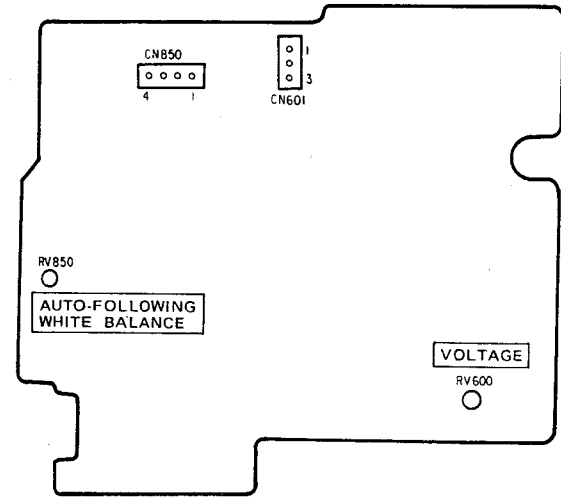


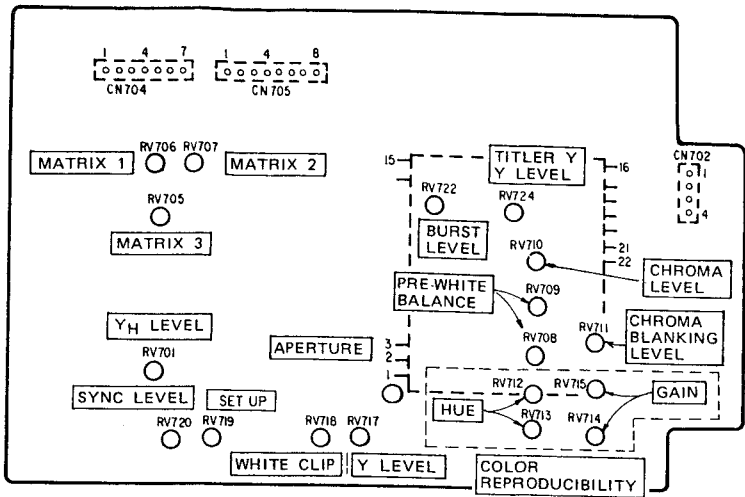
Fig. 1-38

1-7. CAMERA SECTION PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

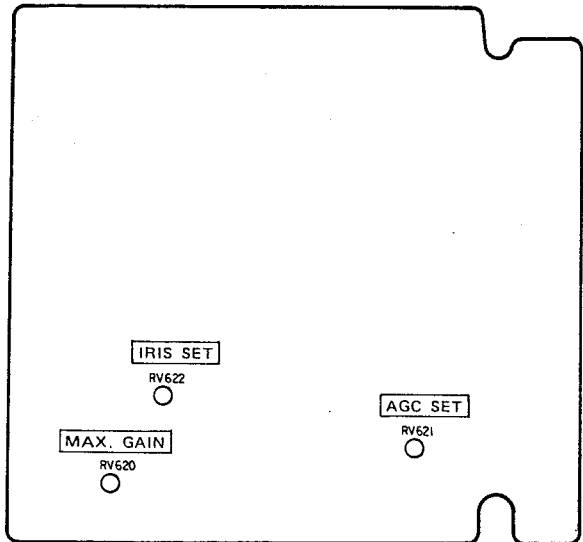
VC-38 BOARD (Conductor side)



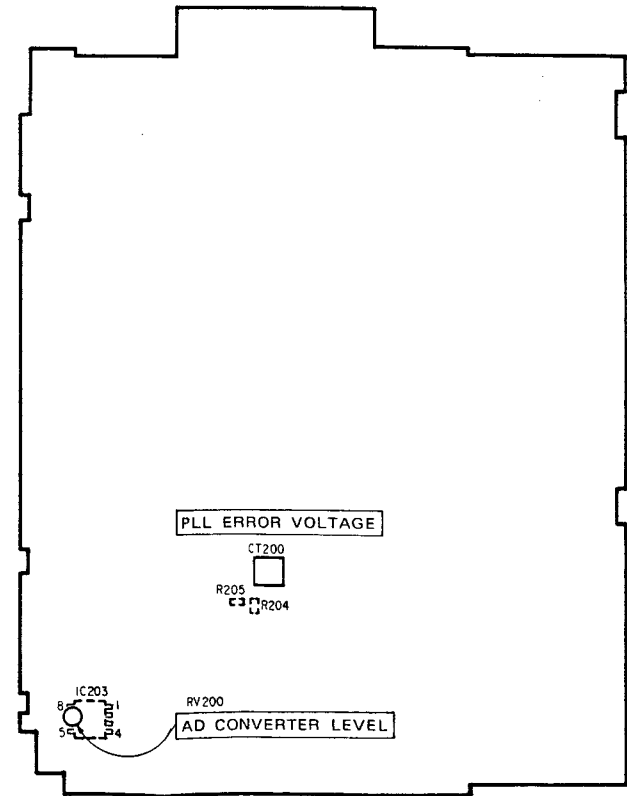
VC-40 BOARD (Conductor side)



VC-39 BOARD (Conductor side)



SS-86 BOARD (Conductor side)



SECTION 2 MECHANICAL ADJUSTMENT

Refer to Section 2 DISASSEMBLY on the service manual for the removal of cabinet and each printed circuit board.

2-1. LENS SECTION REMOVAL

2-1-1. Camera Frame Removal

- 1) Remove two screws ❶ and VC shield case ❷.
- 2) Remove the camera frame ❸.
- 3) Remove AF shield plate ❹ and AF cover ❺.

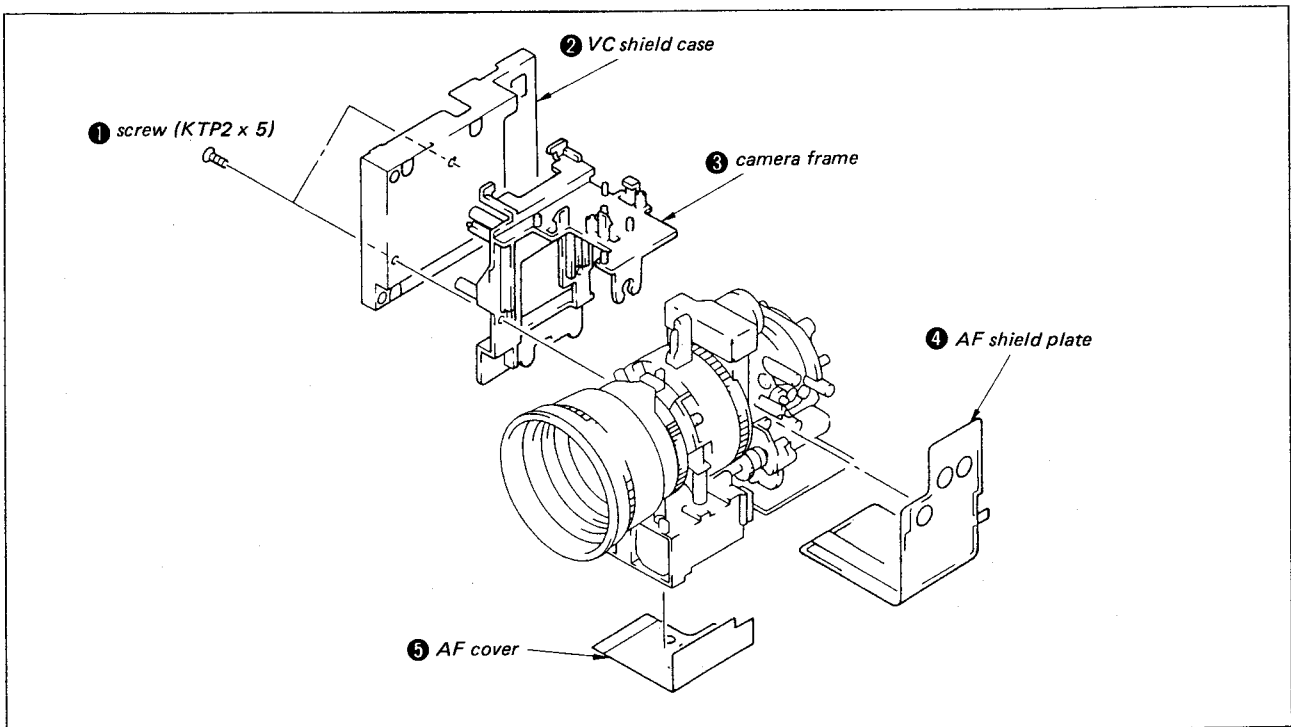


Fig. 2-1

2-1-2. AF Board Removal (See Fig. 2-2.)

- 1) Remove a screw ❶ and AF board ❷.
- 2) Remove four connectors ❸.

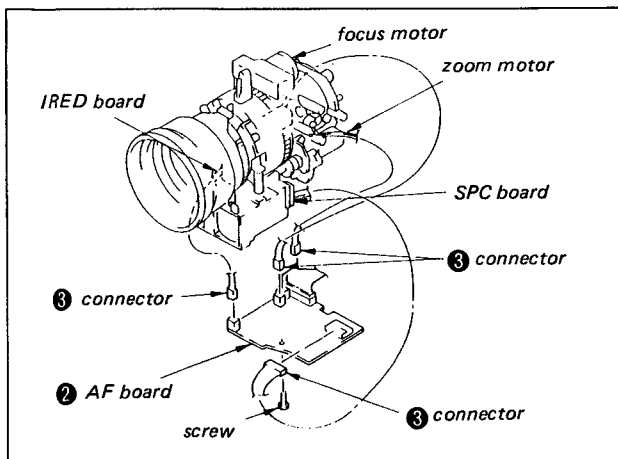


Fig. 2-2

2-1-3. Focus Motor and Zoom Motor Removal (See Fig. 2-3.)

- 1) Remove a screw ❶ and the zoom motor ❷.
- 2) Remove a screw ❸ and the focus motor ❹.

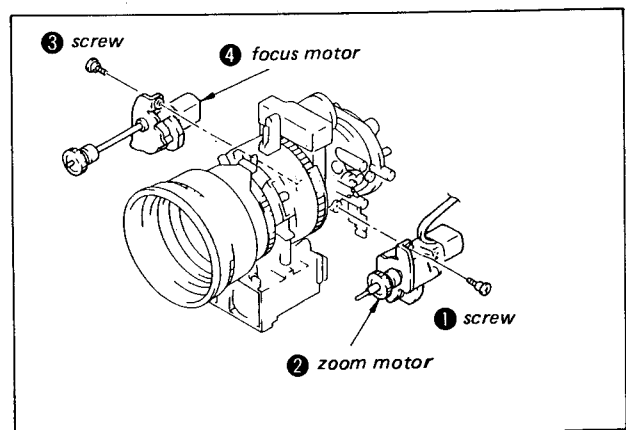


Fig. 2-3

2-1-4. AF Block Removal (See Fig. 2-4.)

- 1) Remove two screws ① and then the AF block ②.

Note 1: The screw hole on the IRED mirror tube side is hidden by a tape. Don't forget to put a tape on setting up.

Note 2: On setting up the AF block, confirm the prism arm (b) is geared with the focus ring cam surface (a) correctly.

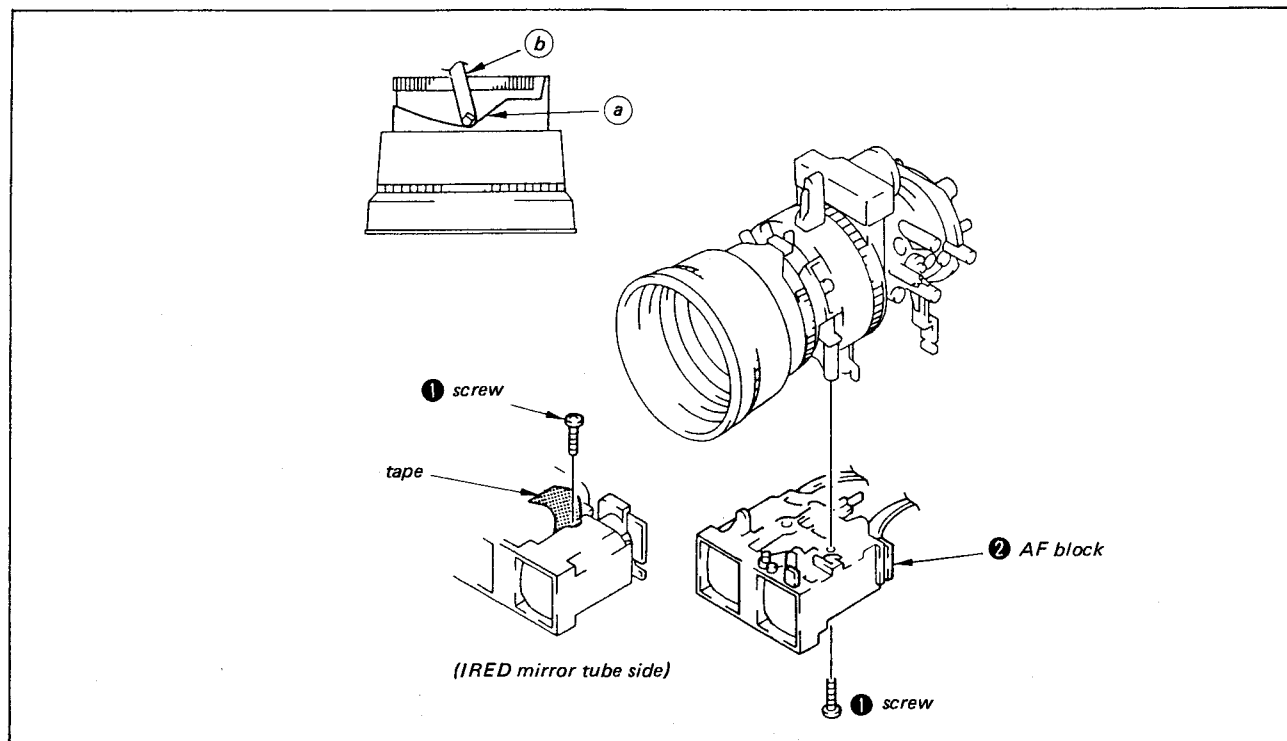


Fig. 2-4

2-1-5. Relay Mirror Tube Unit Removal (See Fig. 2-5.)

- 1) Remove two screws ①.
- 2) Remove the eccentric roller ②, and the relay mirror tube unit ③.

Note: After setting up, do the back focus adjustment.

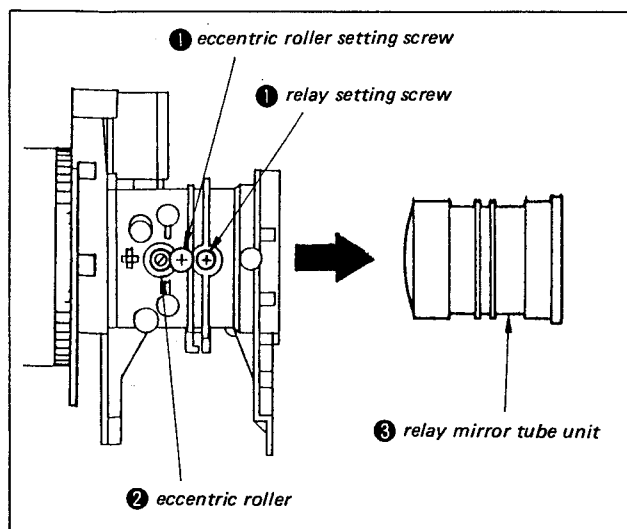


Fig. 2-5

2-1-6. Iris Motor Removal (See Fig. 2-6.)

- 1) Remove the shading plate ①.
- 2) Remove a screw ② and the iris motor ③.

Note: After removing, don't break the iris feathers. The iris feathers are easy to removed, therefore set the feathers correctly using tweezers not by hand.

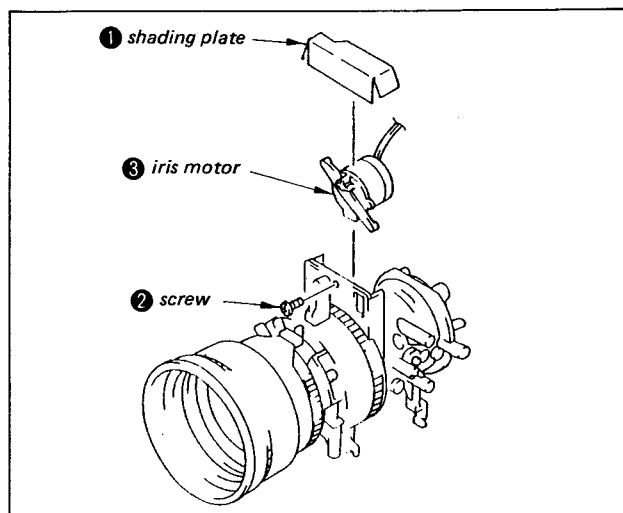


Fig. 2-6

2-1-7. Iris Feathers Removal (See Fig. 2-7.)

- 1) Remove the iris motor. (See item 2-1-6.)
- 2) Remove the iris feather A by setting the (a) portion and the projection for feather.
- 3) As the same rule, remove the iris feather B.

Note: Use tweezers not hands.

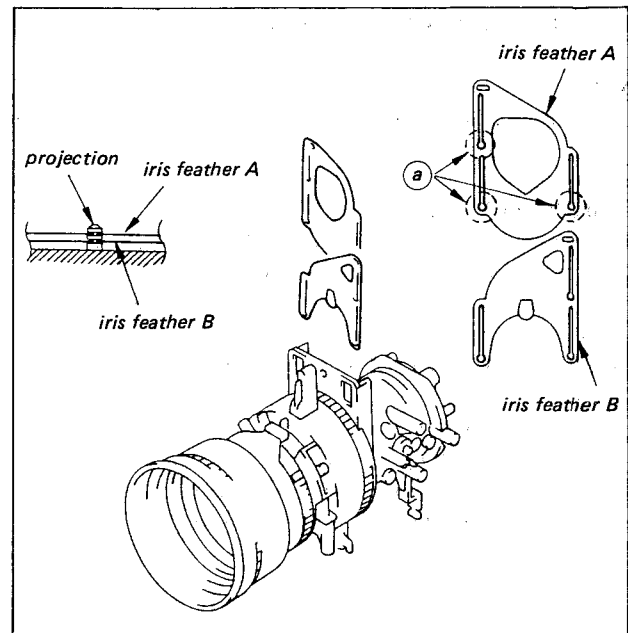


Fig. 2-7

2-1-8. Zoom Ring Removal (See Fig. 2-8.)

- 1) Remove AF board, focus motor, zoom motor, and the AF block. (See items 2-1-2 to 2-1-4.)
 - 2) Remove a screw ① and N stopper ②.
 - 3) Remove the focus lens ass'y ③.
 - 4) Set the focus side on the bottom, and remove three screws ④.
 - 5) Without removing the fixed mirror ⑤, turn the set upside down.
 - 6) Set the zoom lens to "TELE" side, and remove a screw ⑥ and the leaf spring ⑦.
 - 7) Pull up straightly the fixed mirror tube ⑤ slowly.
- Note:** Be careful about spring.
- 8) Release the zoom ring ⑧ and the cam ring ⑨ from the fixed mirror tube.

2-1-9. Zoom Ring Setting (See Fig. 2-8.)

- 1) Set the cam ring ⑨ and the zoom ring ⑧ to the fixed mirror tube ⑤.
- Note:** Set the position a of the cam ring and the zoom ring.
- 2) Install the fixed mirror tube slowly and straightly down.
- Note:** Set the (c) position of the relay holder to the positioning hole on the fixed mirror tube.
- 3) Set the zoom lens to "TELE" side, mount the leaf spring ⑦ and screw in the screw ⑥.
- Note:** Move the zoom "TELE" ↔ "WIDE" confirm it moves smoothly.
- 4) Set the focus side on the bottom not to move the fixed mirror tube, and screw in three screws ④.
 - 5) Install the focus lens ass'y to the fixed mirror tube.
 - 6) Screw in the N stopper ② with a screw ①.
 - 7) Mount the AF block, focus motor, zoom motor, and AF board. (See items 2-1-2 to 2-1-4.)
 - 8) Confirm the AF range finding. When out of order, do the AF range finder adjustment. (See item 1-5-2.)

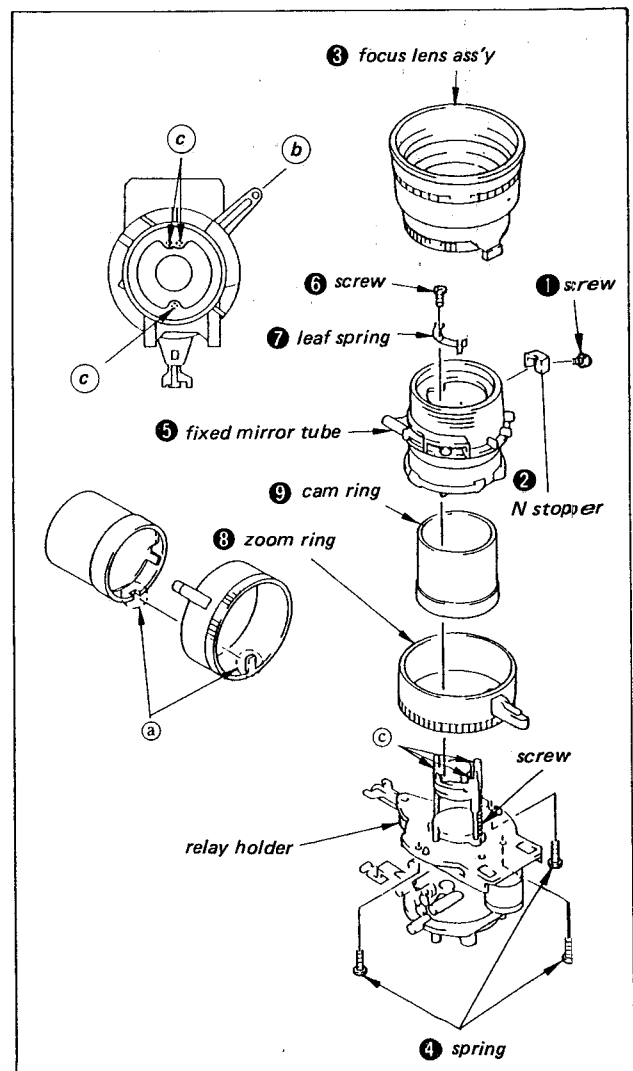


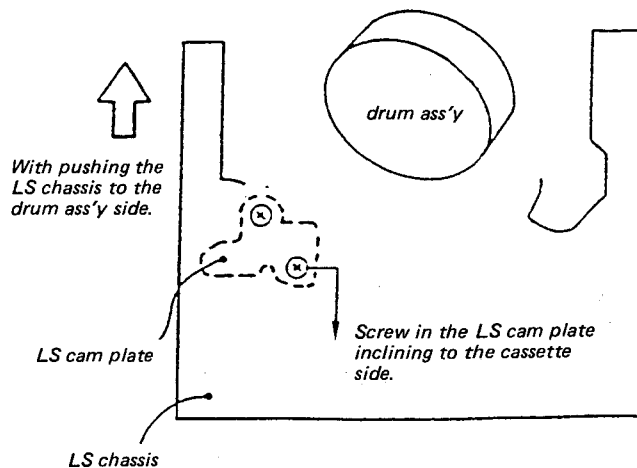
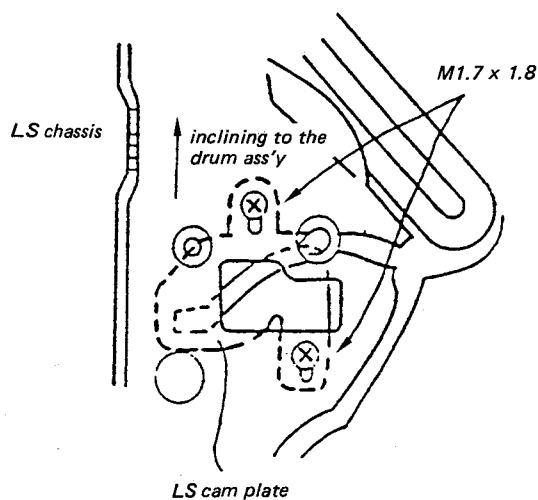
Fig. 2-8

2-2. LS CAM PLATE ADJUSTMENT

Note: When replacement of LS chassis, LS cam plate, mechanical chassis, or LS gear C, need to be done this adjustment.

[Adjustment Method]

- 1) Temporally screw in the LS cam plate to the rear side of the LS chassis, and apply some grease to the gap.
(With two screws M1.7 x 1.8 screw in inclining to the drum ass'y.)
- 2) After installing the LS chassis to the mechanical chassis:
 - 1 Loosen two screws M1.7 x 1.8.
 - 2 With pushing the LS chassis to the drum ass'y side,
 - 3 screw in the LS cam plate inclining to the cassette side (the opposite side of the drum ass'y).



SECTION 3

ELECTRICAL ADJUSTMENT (VIDEO SYSTEM)

During the adjustment, see the parts arrangement diagram for adjustments on page 40.

The following measuring instruments are needed in adjusting the VTR section:

[Equipment required]

- 1) Monitor TV
 - 2) Oscilloscope Dual-trace, Bandwidth more than 10MHz with delay mode (Use a probe of 10:1, unless otherwise specified.)
 - 3) Frequency counter
 - 4) Pattern generator with video output terminal
 - 5) Digital voltmeter
 - 6) Audio generator
 - 7) Audio level meter
 - 8) Audio distortion meter
 - 9) Audio attenuator
 - 10) Stabilized power supply unit
 - 11) Alignment tape
- For tracking adjustment (WR5-1N)
Part number: 8-967-995-01
- For video frequency response adjustment (WR5-6N)*¹
Part number: 8-967-995-12
- For operation check (WR5-4NL)*²
Part number: 8-967-995-51
- For operation check (WR5-4NSP)*³
Part number: 8-967-995-41

*¹: WR5-2N (8-967-995-11) is also available.

*²: WR5-3NL (8-967-995-31) is also available.

*³: WR5-3NSP (8-967-995-42) is also available.

[Precaution for adjustment]

Except "Battery Failure Adjustment" in System Control Adjustment and "EVF display position adjustment" in Video System Adjustment. The video section can be also adjusted without the camera section. Remove the camera section by disconnecting the following 4 connectors:

1. VC-39 board CN622
2. VC-40 board CN702
3. VC-40 board CN703
4. SS-86 board CN005

EVF (Electrical View Finder) section is only necessary for "Battery failure adjustment". Remove the section by disconnecting the following connector.

1. VA-40 board CN360

MIC board (MC-24 board) is not necessary for Video section adjustment. Remove the board by disconnecting the following connector.

1. VA-40 board CN361

[Equipment connection]

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown in the figure below.

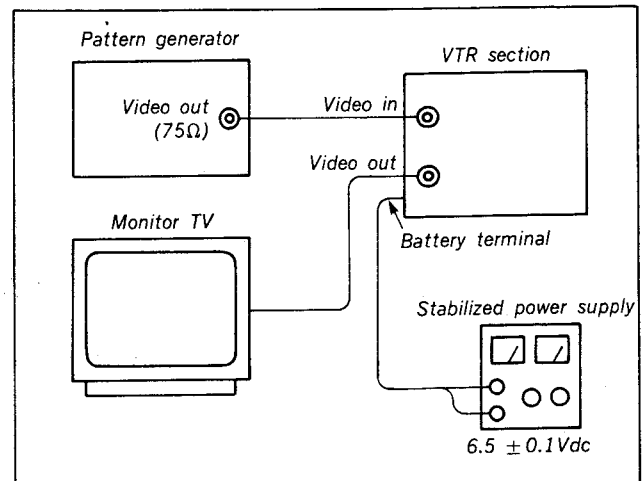


Fig. 3-1

[Setting up for adjustment]

Video signals output by an pattern generator are used as adjustment signals when adjusting the video section, and these video output signals should be within the required standard. Connect an oscilloscope to J360 (VIDEO IN) on the VA-40 board. Confirm that the amplitudes of video signal SYNC signals, of picture portions, and of burst signals are flat at approximately 0.3, 0.7, and 0.3V respectively, and that the level ratio of the burst signals and "red" signals are 0.30:0.66. Fig. 9-2 shows video signals (color bars) used in the video section adjustments.

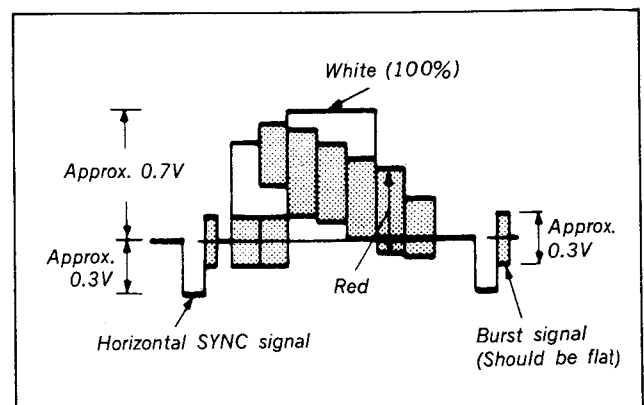
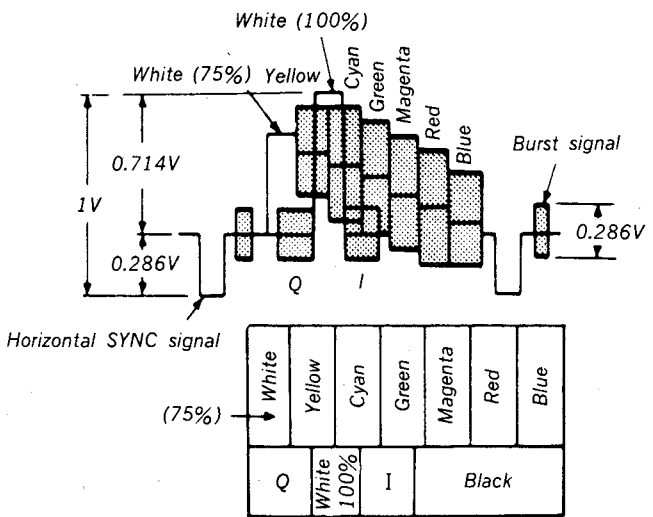


Fig. 3-2 Pattern generator color bar signals

[Alignment tape]

Tape	Description	Use for
Tracking (WR5-1N)	1. Recording area 2. Recording content: PCM — Video CH2: 1MHz linearity adjustment signal (CH1: 9MHz)	Drum linearity adjustment
Video frequency response (WR5-6N)	1. Recording area 2. Recording content 3. Marker RF sweep 0 to 10MHz 1, 3.58, 5.5 and 7MHz	Frequency response adjustment
Operation checking SP mode (WR5-4NSP) LP mode (WR5-4NL) Note: PCM area is not included in WR5-4NL.	1. Recording area 2. Recording content ■ Video area ● Video signals Color bar: 4 min. } Iterative Monoscope: 4 min. } [Color bars]  ● Audio signal (AFM) 400Hz, 60% modulation ■ PCM area ● Audio signal (PCM) 1kHz, 0dBs 4 min. color bar portion 20Hz, -6dBs 2 sec. } Mono scope portion iterative 400Hz, -6dBs 4 sec. } 14kHz, -0.7dBs 2 sec. }	Operation checking

[Required level and impedance of input/output signal]

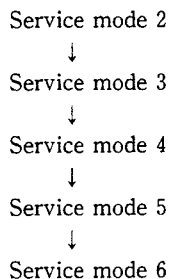
Video input	Mini pin jack Input signal: 1Vp-p, 75Ω unbalanced, sync negative
Video output	Pin jack Output signal: 1Vp-p, 75Ω unbalanced, sync negative
Audio input	Mini pin jack Input level: -10dBs (0dBs = 0.775Vrms)
Audio output	Pin jack Specified output: -10dBs Loading impedance: less than 10kΩ

[Service mode]

Lead the unit to service mode by the following procedures.

1. Service mode start

When **[SVP]** land (K IN 0 (W190 pin 28) on FC-16 board) and K OUT 3 (W190 pin 29) is shorted for more than a second, service mode goes to 1 and all segments in LCD lights up. After this, every time the land is shorted, the service mode turns as follows:



The number of the service mode is shown at the most right digit on the LCD (except Service mode 1).

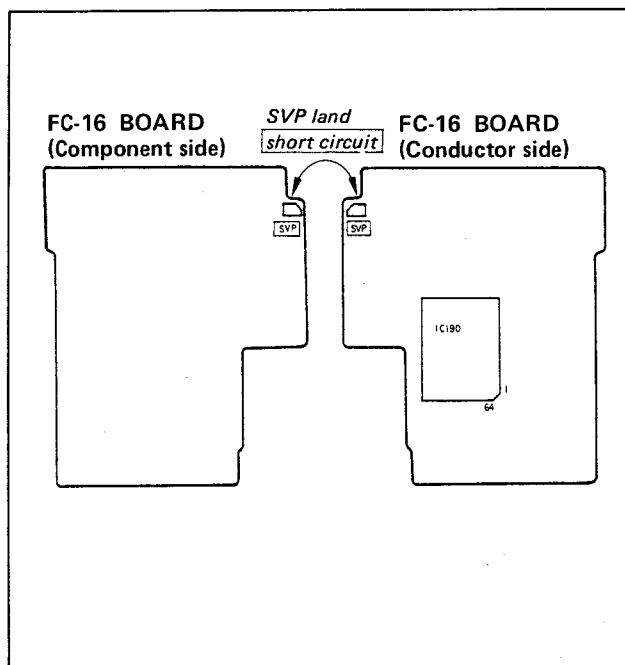


Fig. 3-3-1. SVP land

When setting the service mode with cabinet, remove the VTR panel by the procedure of the item 2), 2-2 REMOVING THE CABINET (LEFT), SECTION 2 DISASSEMBLY on the service manual, and short-circuit the **[SVP]** land on FV-1 board.

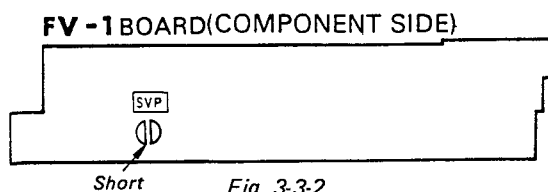


Fig. 3-3-2.

2. Service mode release

Short **[SVP]** land after the Service mode 6 comes out, and it makes the LCD (Liquid crystal display) indicates "--:--:--", and pressing data button makes it counter indication.

3. Indication on LCD

Following codes are shown on the LCD (Liquid crystal display) at each service mode except Service mode 1.

- ① Present executing operation mode
It is indicated by two-digits at each service mode except Service mode 6. (See Table 3-1.)
- ② Following executing operation mode
(When there is no command of following operation, present executing operation mode is shown.)
It is indicated by two-digits. (See Table 3-1.)
- ③ Warning code
When something unusual happens, the cause is shown by a digit code. (See Table 3-2.)
- ④ Service mode number

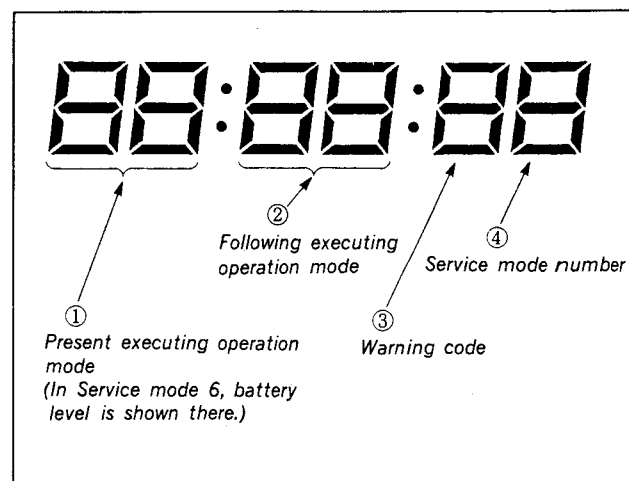


Fig. 3-4 Indication on LCD

Table 3-1 Code for operation mode

Code	Operation mode	Code	Operation mode	Code	Operation mode
00	INITIAL	83	REW	46	CUE
01	EJECTED	04	VTR REC	56	REV
11	DEW	14	REC PAUSE	A6	FR SEARCH CUE
31	UNLOADING	44	INSERT	B6	FR SEARCH REV
02	STOP READY	54	INSERT PAUSE	07	STILL
12	LOADING	A4	CAM REC	27	1/5 SLOW
32	STOP BATTERY DOWN	B4	CAM STANDBY	47	1/10 SLOW
52	STOP EMERGENCY	85	EDIT CUE	67	FRAME
62	STOP TAPE END	95	EDIT REV	69	REC REVIEW
72	STOP TAPE TOP	06	PB		
03	FF	36	- ×1		

Table 3-2 Warning code

Code	Cause of abnormal inoperation (detected by Mechanism control IC001 on SS-86 board)
0	Normal
1	Error in loading/unloading
2	Error of capstan speed. (Pulse is not fed to IC001 pin ⑩ (CFG) or the pulse frequency is too low.)
3	Error of capstan speed. (Pulse frequency at IC001 pin ⑩ is too high.)
4	Error in reel rotation. (Pulse is not fed to IC001 pin ③ (T reel FG) or pin ④ (S reel FG).)
5	Error in drum rotation. (Pulse frequency at IC001 pin ⑪ (DFG) is too high or too low.)
6	Error in drum phase. (Drum phase is not locked.)

4. Description of the service modes

[Service mode 1]

All segments in LCD light up.

[Service mode 2]

Not used with this model.

[Service mode 3]

“Switching position adjustment” can be performed in playback mode.

[Service mode 4]

“CH'1 playback frequency characteristic adjustment” can be performed in playback mode.

[Service mode 5]

1) Emergency inoperation by the following detection of abnormality is released.

1. Dew detection
2. Battery down detection
3. Error detection in loading/unloading
4. Error detection in drum rotation
5. Error detection of drum phase
6. Error detection of capstan (no CFG pulse)
7. Error detection of capstan (CFG pulse frequency is too high.)

2) When the still adjustment volume is displayed, still adjustment can be performed.

[Service mode 6]

“Battery failure adjustment” can be performed.

Battery level is indicated at most left two-digits. Or mark “X” is shown in lower center on screen of a monitor TV at CAMERA mode, and “EVF display position adjustment” can be performed.

3-1. POWER SUPPLY ADJUSTMENT

3-1-1. VA 5V Voltage Check (VA-40 board)

Mode	E-E
Signal	Arbitrary
Measurement point	W361 pin ⑦
Measuring instrument	Digital voltmeter
Specified value	5.05 $\pm$ 0.05Vdc

[Checking method]

At pin ⑦ of W361 satisfies the specification.

3-2. SYSTEM CONTROL ADJUSTMENT

3-2-1. Battery Failure Adjustment (SS-86 board)

Mode	Record
Subject	Arbitrary
Measurement point	+: (+) battery terminal -: (-) battery terminal
Measuring instrument	Digital voltmeter
Adjusting element	RV001
Specified value	The digits on the counter of LCD indicate "92", when power supply voltage is 5.76 $\pm$ 0.01Vdc.

Note 1:

Connect a stabilized power supply unit and the battery terminals ((+) and (-)) with thick and short lead wires.

Note 2:

Camera section and EVF one should be connected to the unit.

[Adjusting method]

- 1) Set to Service mode 6. (See [Service mode].)
- 2) Confirm the power supply voltage to 6.5 $\pm$ 0.1Vdc.
- 3) Set to camera REC mode.
- 4) Put down the power supply voltage slowly to 5.76 $\pm$ 0.01Vdc.
- 5) Adjust RV001 so that the left two digit is "92".

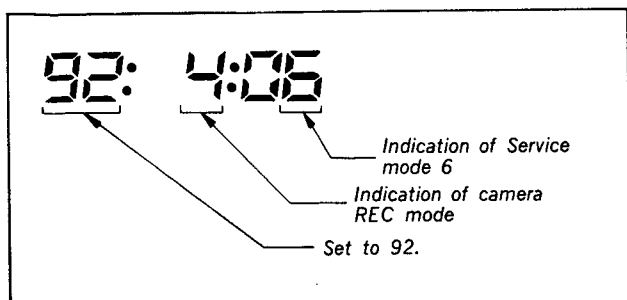


Fig. 3-5

[Confirming method]

- 1) Confirm that the Service mode 6 is set.
- 2) Make the power supply voltage to 6.5 $\pm$ 0.1Vdc.
- 3) Turn on the power (from OFF).
- 4) Make the camera to REC mode.
- 5) Down the power supply voltage slowly to 5.81 $\pm$ 0.01Vdc.
- 6) Either of the following indications should be indicated on LCD.
 - 1) No  indication
 - 2)  indication blinks slowly (0.8Hz).
- 7) Down the power supply voltage slowly to 5.71 $\pm$ 0.01Vdc. Confirm that the  indication blinks rapidly (4Hz).
- 8) Release the service mode (See [Service mode]).

3-2-2. Clock Adjustment (FC-16 board)

Mode	E-E
Measurement point	IC190 pin ⑤
Measuring instrument	Frequency counter
Adjusting element	CT190
Specified value	512.001 $\pm$ 0.002Hz

[Checking method]

Adjust CT190 so that the frequency counter reading is 512.001 $\pm$ 0.002Hz.

3-3. SERVO SYSTEM ADJUSTMENT

3-3-1. Switching Position Adjustment (SS-86 board)

Mode	Playback
Signal	Alignment tape for operation check (WRS-4NSP)
Measurement point	CH1: VIDEO OUT (VA-40 board J361) CH2: SS-86 board TP303 (RF SWP)
Measuring instrument	Oscilloscope
Adjusting element	RV002
Specified value	$6.5 \pm 0.3H$ ($410 \pm 20\mu\text{sec}$)

[Adjusting method]

- 1) Make the unit to Service mode 3 (See [Service mode]).
- 2) Adjust RV002 for $6.5 \pm 0.3H$ ($410 \pm 20\mu\text{sec}$).
- 3) Release the service mode.

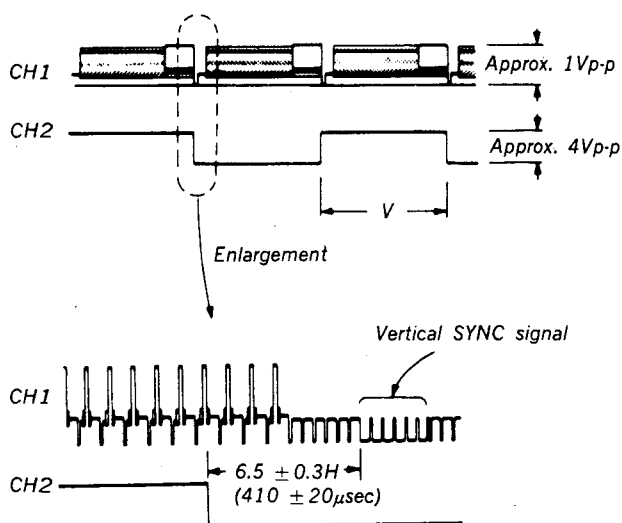


Fig. 3-6

3-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle be followed the undermentioned adjustment procedure.

The color video signal supplied from the pattern generator is utilized as the video input signal of the video system adjustment in recording mode. Make sure to check that the SYNC signal and color burst signal are matched with those in the set-up of during the adjustment of as shown in Fig. 3-2.

[Adjustment procedure]

- 1) Playback frequency response adjustment
- 2) Flying erase check
- 3) Y/C separation adjustment
- 4) IR2 adjustment
- 5) Emphasis input level adjustment
- 6) Video out level adjustment
- 7) PB Y level adjustment
- 8) YD adjustment
- 9) Y FM carrier frequency adjustment
- 10) Y FM deviation adjustment
- 11) Chroma emphasis f_0 adjustment
- 12) REC Y recording current adjustment
- 13) REC C recording current adjustment
- 14) EVF display position adjustment

3-4-1. Playback Frequency Response Adjustment (SS-86 board)

(1) CH1, CH2 adjustment

CH2 adjustment is shown in [] :

Mode	Playback
Signal	Alignment tape for frequency response adjustment. (WR5-6N)
Measurement point	Pin ④ of CN004 in SS-86 board External trigger: Pin ② of CN004 in SS-86 board Trigger slope: + [-]
Measuring instrument	Oscilloscope
Adjusting element	RV302 [RV301]
Specified value	3.58MHz level: 5.5MHz level = 4 : 3

[Adjusting method]

- Adjustment RV302 [RV301] so that the level difference ratio between 3.58MHz and 5.5MHz should be 4:3.

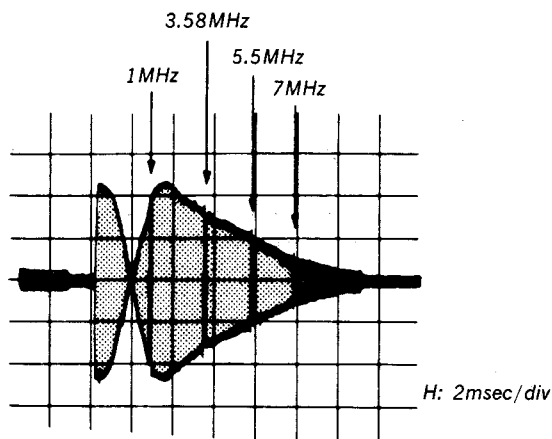


Fig. 3-7

(2) CH1' adjustment

Mode	Playback at Service mode 4 *1
Signal	Alignment tape for frequency response adjustment (WR5-6N)
Measurement point	Pin ⑤ of CN004 in SS-86 board External trigger: Pin ② of CN004 in SS-86 board Trigger slope: -
Measuring instrument	Oscilloscope
Adjusting element	RV306
Specified value	3.58MHz level: 5.5MHz level = 4:3

*1 Make the unit to service mode 4 with reference to [Service mode], and make sure to release it after the adjustment.

[Adjusting method]

Adjust RV306 so that the level difference ratio between 3.58MHz and 5.5MHz should be 4:3.

3-4-2. Flying Erase Check (SS-86 board)

Mode	Record
Signal	Arbitrary
Measurement point	Pin ⑫ of CN003 (FE (X))
Measuring instrument	Oscilloscope and frequency counter
Specified value	Frequency: more than 7.5MHz Voltage: more than 7.0Vp-p

Note: Be sure to use MP type tape.

[Checking method]

Confirm that the oscillation frequency is more than 7.5MHz, and the oscillation voltage is more than 7.0Vp-p.

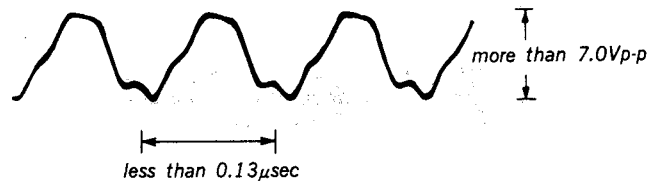


Fig. 3-8

3-4-3. Y/C Separation Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ⑳ of IC360
Measuring instrument	Oscilloscope
Adjusting element	RV366
Specified value	Minimum residual chroma component

Note:

Before adjustment, connect 10μF capacitor in between pin ⑳ of IC360 and ground.

[Adjusting method]

- Adjust RV366 to minimize residual chroma component.

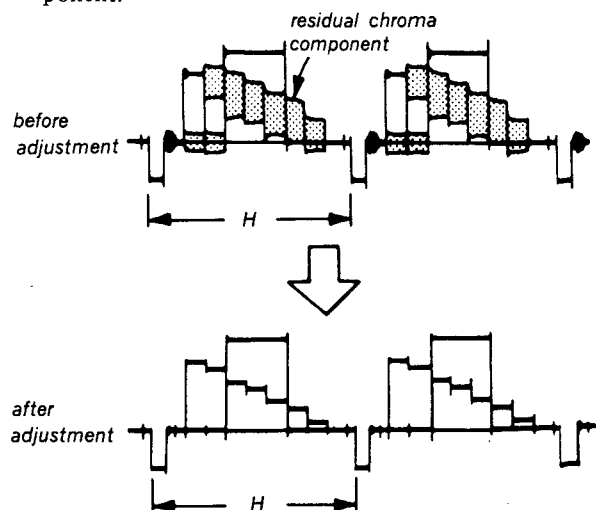


Fig. 3-9

3-4-4. IR2 Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	CH1: Pin ⑤ of IC360 (REC C RF OUT) CH2: Pin ⑧ of IC360 (BF OUT)
Meter	Oscilloscope
Adjusting element	RV365
Specified value	$a = b$ (See Fig. 3-10.)

Note:

Adjust after connecting a 10 k-ohm resistor between pin ⑧ and GND of IC360.

[Adjusting method]

- 1) Adjust RV365 so that the falling position of the burst pulse of CH2 (BF OUT) aligns with the center of the burst signal of CH1 (REC C RF OUT). (See Fig. 3-10.)

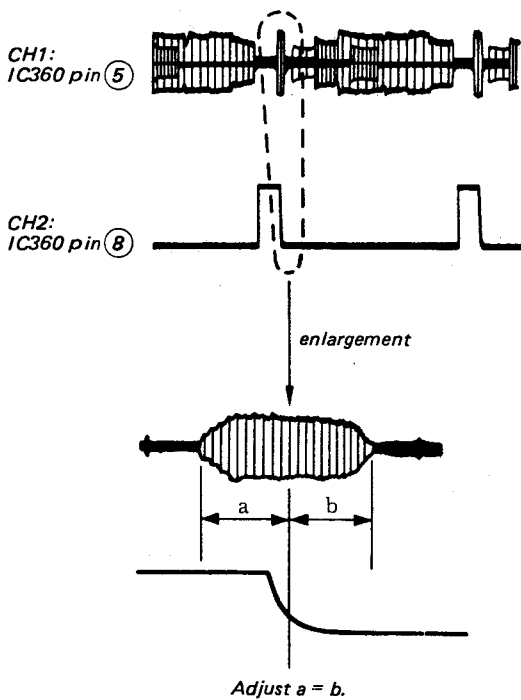


Fig. 3-10

3-4-5. Emphasis Input Level Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ⑩ of IC360
Measuring instrument	Oscilloscope
Adjusting element	RV369
Specified value	$0.50 \pm 0.02V_{p-p}$

[Adjusting method]

- 1) Adjust RV369 for $0.50 \pm 0.02V_{p-p}$.

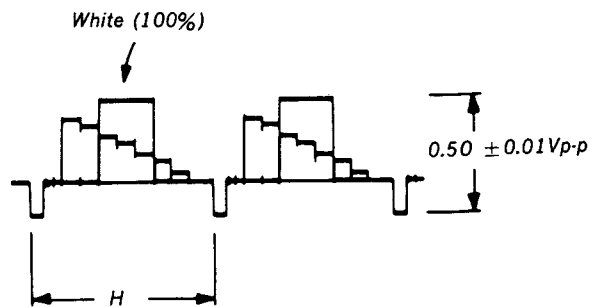


Fig. 3-11

3-4-6. Video Out Level Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	J361 (Video Out) on VA-40 board
Measuring instrument	Oscilloscope
Adjusting element	RV360
Specified value	$1.00 \pm 0.05V_{p-p}$

Note:

Be sure to terminate J361 (VIDEO OUT) at 75 ohms.

[Adjusting method]

- 1) Adjust RV360 on for $1.00 \pm 0.05V_{p-p}$.

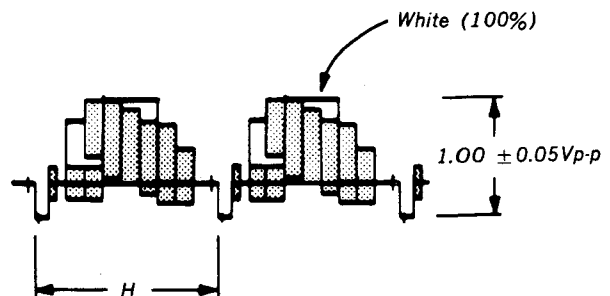


Fig. 3-12

3-4-7. PB Y Level Adjustment (VA-40 board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-3NSP), Color bar portion
Measurement point	J361 (VIDEO OUT) on VA-40 board
Measuring instrument	Oscilloscope
Adjusting element	RV362
Specified value	$1.00 \pm 0.05V_{p-p}$

Note 1:

Be sure to be off the EDIT switch (PA-13 board S990).

Note 2:

Be sure to terminate J361 (VIDEO OUT) at 75 ohms.

[Adjusting method]

- 1) Adjust RV362 for $1.00 \pm 0.05V_{p-p}$.

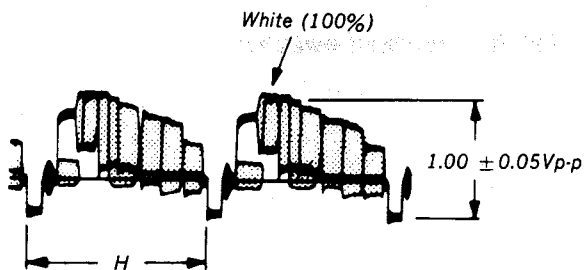


Fig. 3-13

3-4-8. YD Adjustment

Mode	Playback + Pause
Signal	Alignment tape for operation check (WR5-5NSP), Color bar portion
Measurement point	Monitor TV
Measurement equipment	Monitor TV
Adjusting element	RV367
Specified value	Make inconspicuous the Y flicker

[Adjustment method]

Adjust with RV367 so to make inconspicuous the Y flicker on the monitor TV screen.

3-4-9. Y FM Carrier Frequency Adjustment (VA-40 board)

Mode	E-E
Signal	No signal
Measurement point	Pin ⑤ of IC360
Measuring instrument	Frequency counter
Adjustment element	RV364
Specified value	$4.20 \pm 0.05MHz$

[Adjusting method]

- 1) Adjust RV364 for $4.20 \pm 0.05MHz$.
- 2) Perform "Y FM Deviation Adjustment".

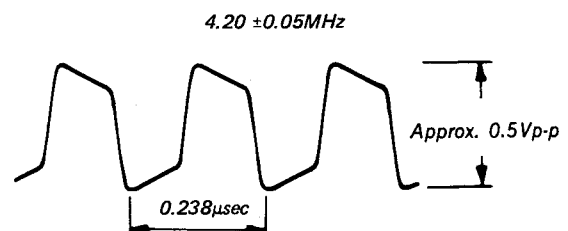


Fig. 3-14

3-4-10. Y FM Deviation Adjustment (VA 40 board)

Mode	Record and Playback
Signal	Color bar
Measurement point	J361 (VIDEO OUT) on VA-40 board
Measuring instrument	Oscilloscope
Adjusting element	RV363
Specified value	Playback level: $1.00 \pm 0.05V_{p-p}$

Note 1:

Be sure that the "VIDEO OUT Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been already completed.

Note 2:

Be sure to be off the EDIT switch (S990 on PA-13 board).

Note 3:

Be sure to terminate J361 (VIDEO OUT) at 75 ohms.

[Adjusting method]

- 1) Record the color bar signal.
- 2) Playback the section recorded by 1).
- 3) Confirm that the playback output level is $1.00 \pm 0.05V_{p-p}$.
- 4) When 3) is not satisfied, adjust RV363 as follows. And then repeat the abovementioned steps 1) to 3).

	RV363 turning direction
more than the specified value	counter-clockwise (↺)
less than the specified value	clockwise (↻)

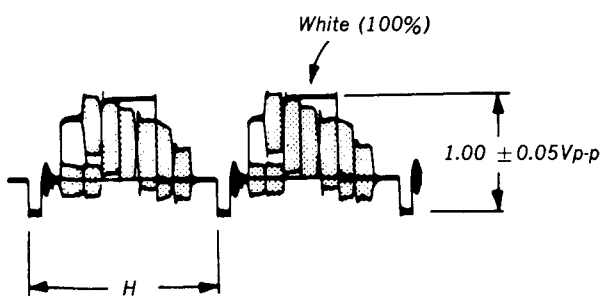


Fig. 3-15

3-4-11. Chroma Emphasis fo Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ⑤ of IC360
Measuring instrument	Oscilloscope
Adjusting element	FL360
Specified value	f_0 component minimum.

[Adjusting method]

Adjust FL360 to minimize the amplitude of flat components of chroma signal.

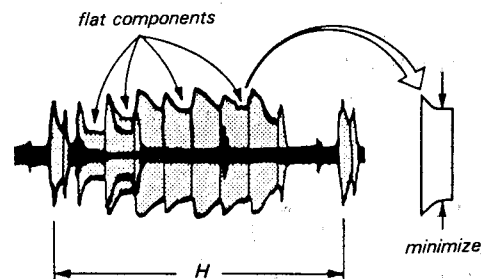


Fig. 3-16

3-4-12. REC Y Recording Current Adjustment (VA-40 board)

Mode	Record
Signal	No signal
Measurement point	Pin ③ of CN004 (REC RF) on SS-86 board
Measuring instrument	Oscilloscope
Adjusting element	RV361
Specified value	$210 \pm 10mV_{p-p}$

Note:

Be sure to perform each Recording Current Adjustment of REC C, REC AFM and REC AFM after the REC Y Recording Current Adjustment.

[Adjusting method]

Adjust RV361 for $210 \pm 10mV_{p-p}$.

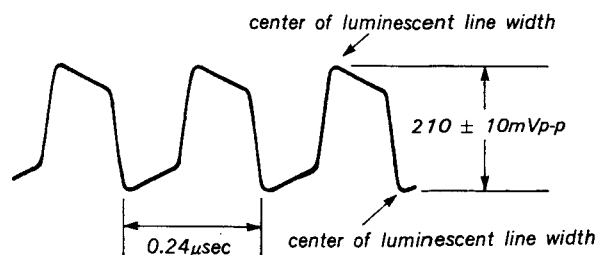


Fig. 3-17

3-4-13. REC C Recording Current Adjustment (VA-40 board)

Mode	Record
Signal	Color bar
Measurement point	Pin ③ of CN004 (REC RF) on SS-86 board
Measuring instrument	Oscilloscope
Adjusting element	RV368
Specified value	130mVp-p

Note 1:

Be sure to perform REC AFM Recording Current Adjustment after the REC C Recording Current Adjustment.

Note 2:

Use MP type tape.

[Adjusting method]

Adjust RV368 for 145mVp-p.

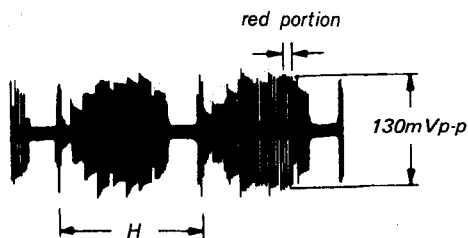


Fig. 3-18

3-4-14. EVF Display Position Adjustment (VA-40 board)

Mode	Camera standby
Object	Optional
Adjusting element	CV360
Specified value	Position the "X" mark in the center of the monitor screen.

[Adjusting method]

- 1) Set to Service mode 6. (See the [Service modes] section.)
- 2) Adjust CV360 to position the "X" mark at the center of the monitor screen ($a = b$). (See Fig. 3-19.)

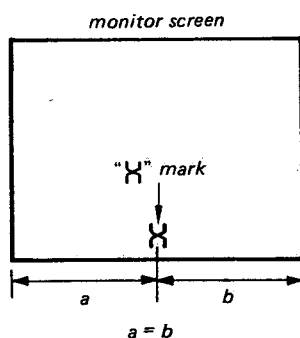


Fig. 3-19

- 3) Release the service mode.

3-5. AUDIO SYSTEM ADJUSTMENT

Color bar signal should input to VIDEO IN terminal for the adjustment.

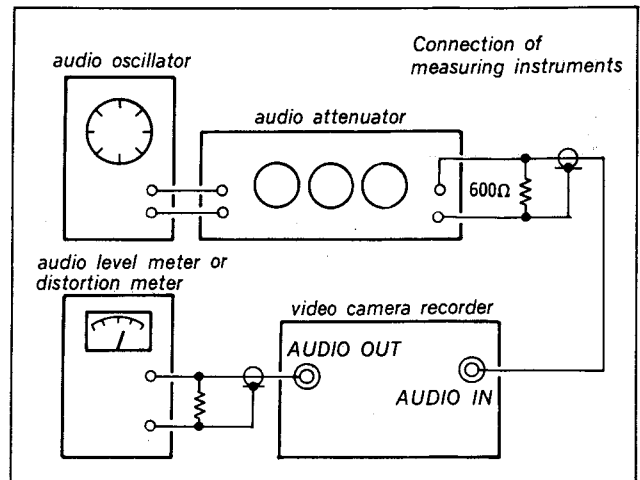


Fig. 3-20

3-5-1. E-E Output Level Check

Mode	Record
Signal	400Hz, -10dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	-10 ± 2dBs

[Checking method]

- 1) Be sure the audio output level is -10 ± 2dBs.

3-5-2. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400Hz, -10dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	-10dB ± 3dBs

[Checking method]

- 1) Record the signal
- 2) Playback the recorded portion.
- 3) Be sure the audio output level is -10 ± 3dBs.

3-5-3. Overall Distortion Check

Mode	Self-recording and playback
Signal	400Hz, -10dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Distortion meter
Specified value	Less than 0.5% * ¹

[Checking method]

- 1) Record the signal.
 - 2) Playback the recorded portion.
 - 3) Be sure the distortion is less than 0.5%. *¹
- *¹ The value in case of using a distortion measuring filter (Fig. 3-21).
It is under 1.0% without the filter.

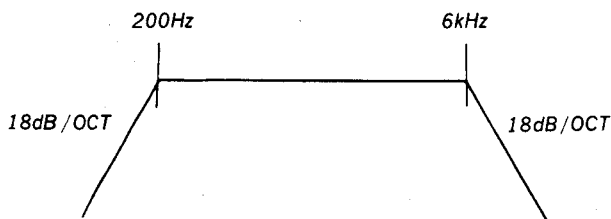


Fig. 3-21

3-5-4. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal Plug in AUDIO IN terminal with a shorting plug.
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	Less than -68dBs * ²

[Checking method]

- 1) Record the signal.
 - 2) Playback the recorded portion.
 - 3) Be sure the noise level is less than -68dBs. *²
- *² The value in case of using IHF-A weighting filter.

3-6. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

3-6-1. Horizontal Slant Adjustment

Mode	Playback
Signal	Monoscope
Specified value	See Fig. 3-23

[Adjusting method]

- 1) Adjust the volume dumbbell ④ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 3-24.)
- 2) Loosen the DY (deflection yoke) tightening nut.
- 3) Make a picture horizontal by turning the DY.
- 4) Retighten the nut. (Do not tighten excessively.)

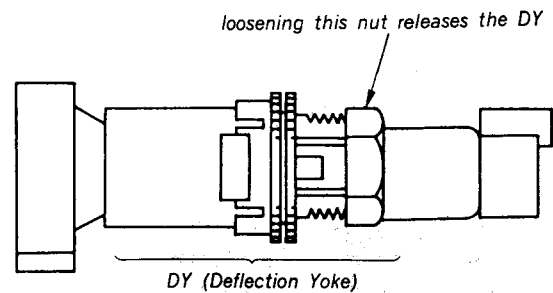
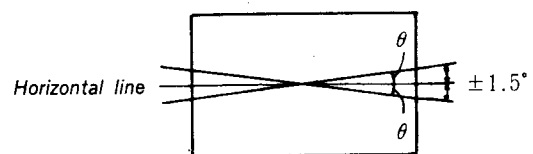
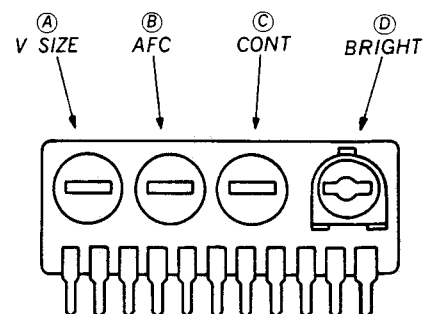


Fig. 3-22



Specified value: A picture is positioned within $\pm 1.5^\circ$ of the horizontal line.

Fig. 3-23



Volume dumbbell (CP901)

Fig. 3-24

3-6-2. Centering Adjustment

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Specified value	See Fig. 3-26

[Adjusting method]

- 1) With the centering magnets, position the screen in even peripheral margins, both horizontally and vertically.

Note:

Since the center position is affected by the terrestrial magnetism, adjust at the center of displacement with turning the unit 360° horizontally.

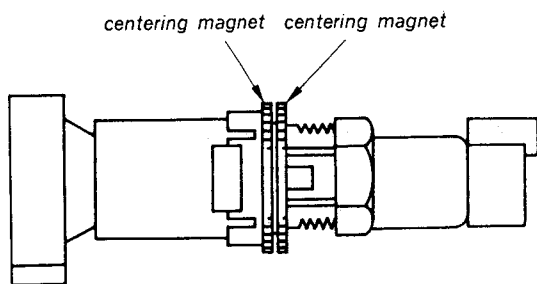


Fig. 3-25

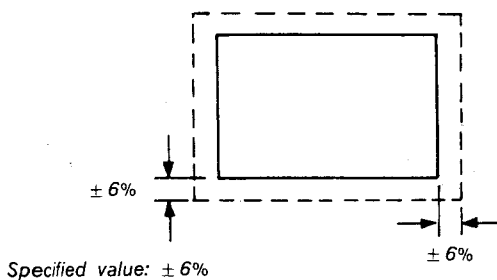


Fig. 3-26

3-6-3. AFC Adjustment (VF-13 board)

Mode	E-E or Camera standby
Signal	Color bar
Measurement point	C915 ⊕ side
Measuring instrument	Digital volt meter or oscilloscope (DC range)
Adjusting element	Volume dumbbell ⑧
Specified value	3.0 ± 0.2Vdc

[Adjusting method]

- 1) Adjust volume dumbbell ⑧ for 3.0 ± 0.2Vdc. (See Fig. 3-24.)

3-6-4. Horizontal Amplitude Adjustment (VF-13 board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Adjusting element	C905
Specified value	6 ± 3%

[Adjusting method]

- 1) Focus with RV901.
- 2) Adjust volume dumbbell ⑨ so that the upper and lower edges of the monoscope picture fits those of the screen. (See Fig. 3-27.)
- 3) Turn volume dumbbell ⑩ for appropriate brightness.
- 4) Connect or disconnect the patterns A and B, which is connected to C905 H size adjusting capacitor, so that the horizontal overscan becomes 6 ± 3% (total of the both sides, right and left). (See Fig. 3-28.)

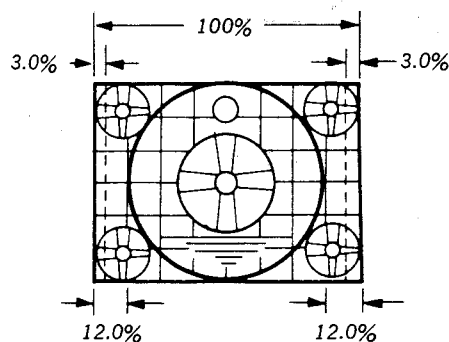
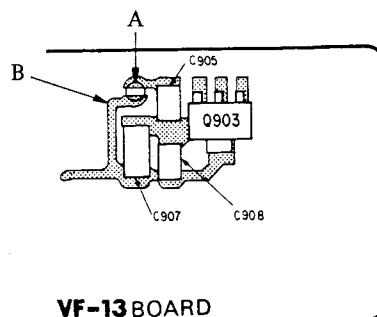


Fig. 3-27



VF-13 BOARD

A	H size
Disconnect	Small
Connect	Large

Fig. 3-28

3-6-5. Vertical Amplitude Adjustment (VF-13 board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Adjusting element	Volume dumbbell ①
Specified value	$6 \pm 3\%$

[Adjusting method]

Adjust the volume dumbbell ① for $6 \pm 3\%$ vertical overscan (total of the both sides, top and bottom).

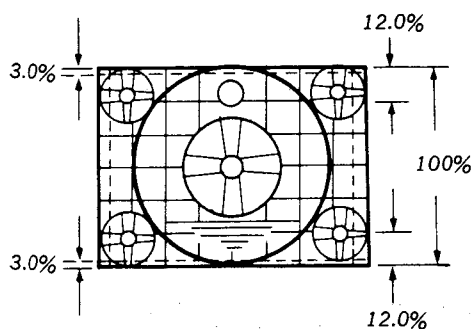


Fig. 3-29

3-6-6. Brightness and Contrast Adjustment (VF-13 board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Adjusting element	Brightness: Volume dumbbell ② Contrast: Volume dumbbell ③

[Adjusting method]

- 1) Adjust volume dumbbell ② and ③ alternately so that light and dark areas of a gray scale is correctly displayed. (The light area should not be so bright that the cross hatch in a monoscope circle blurs. And the dark area should not be so dark that the darkest area and third darkest one on the gray scale can not be distinguished each other.)

3-6-7. Focus Adjustment (VF-13 board)

Mode	PLAYBACK
Signal	Alignment tape for operation checking (WR5-4NSP), monoscope portion
Adjustment element	RV901

[Adjustment Method]

- 1) Adjust to the best focus point with RV901.

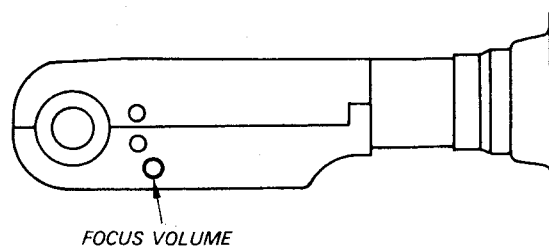
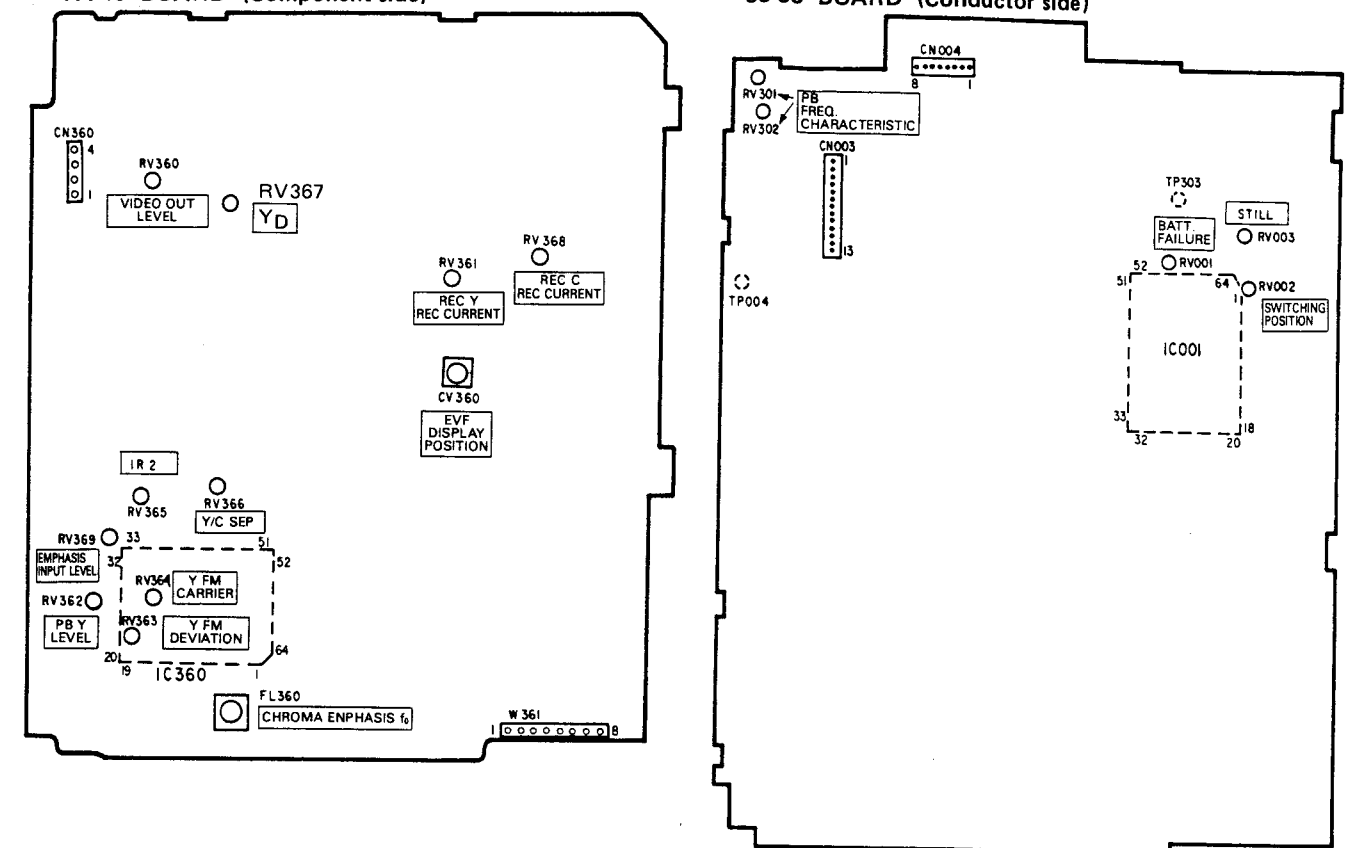


Fig. 3-30

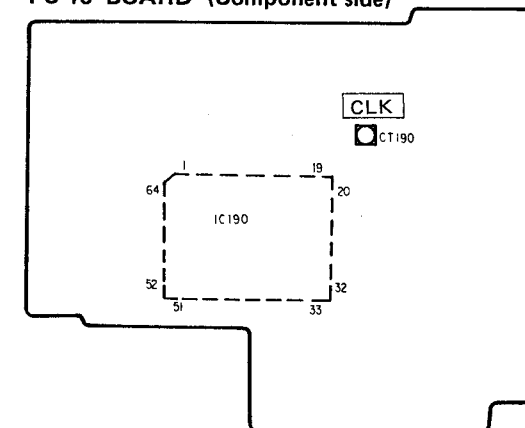
3-6-8. Horizontal and Vertical Amplitude Confirmation

Results of horizontal amplitude adjustment in 3-6-4 and vertical amplitude adjustment in 3-6-5 should meet their specified values, respectively. If not met, make readjustments. In this case, carry out both brightness and contrast adjustment in 3-6-6 and focus adjustment in 3-6-7 again.

3-7. VIDEO SECTION PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS
VA-40 BOARD (Component side) SS-86 BOARD (Conductor side)



FC-16 BOARD (Component side)



VF-13 BOARD (Component side)

